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Apollo/Shadowhawk

USER MANUAL

System Manual

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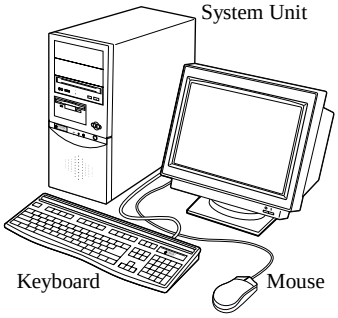
Getting Started

Your PREMIO® system consists of three components:

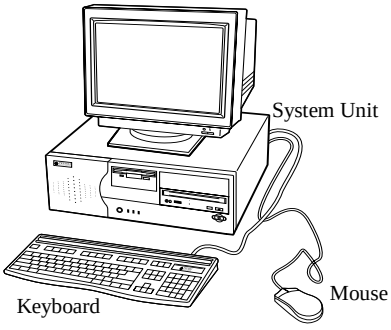
- a mid-tower or desktop system unit
- a keyboard
- a mouse

Add your choice of monitor, and your system is ready to use.

Mid-tower system



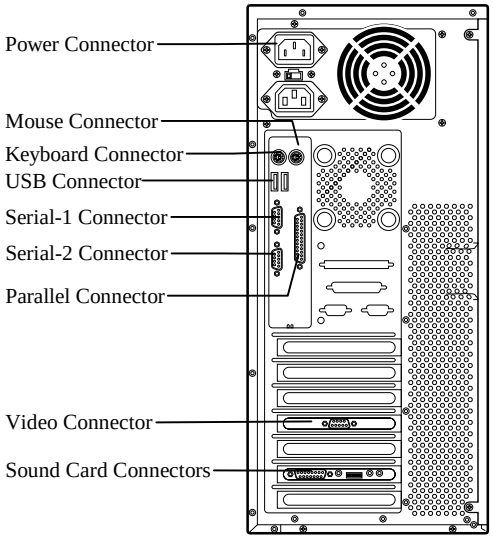
Desktop system



Setting Up

To set up your PREMIO system, simply connect your monitor, the mouse, the keyboard, and any additional components you want to use to the system unit.

Follow these easy steps:



1. Attach your monitor's video cable to the video connector.
2. Attach the mouse cable to the mouse connector.
3. Attach the keyboard cable to the keyboard connector.
4. Attach the cables for any additional components, such as a printer, scanner, or modem, to the parallel, serial, or universal serial bus (USB) connector, as directed in the component's manual.
5. If your system is equipped for multimedia, attach your speakers and microphone to the sound card connectors.
6. Plug your monitor's power cord into a power outlet.
7. Attach the female end of the system power cord to the system unit's power connector, and then plug the other end of the cord into a power outlet.

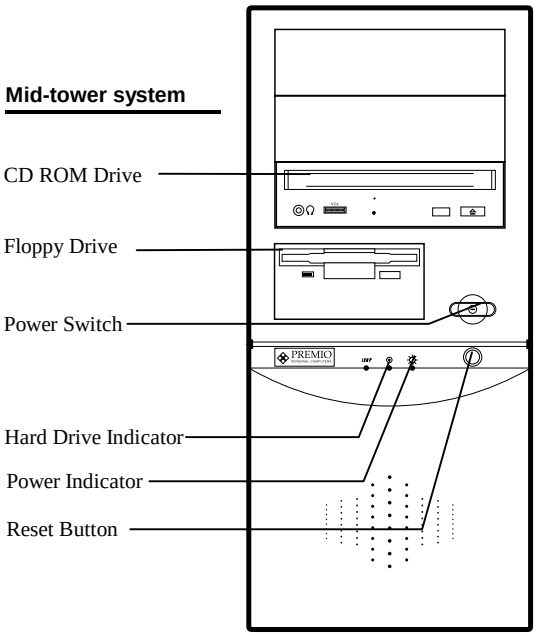
Your PREMIO system is now ready to use. To start the system, turn on your monitor's power switch and then press the system power switch as shown on the next page.

Switches and Indicators

The system unit's front panel provides access to the CD-ROM and floppy drives, and to the system's switches and indicator lights.

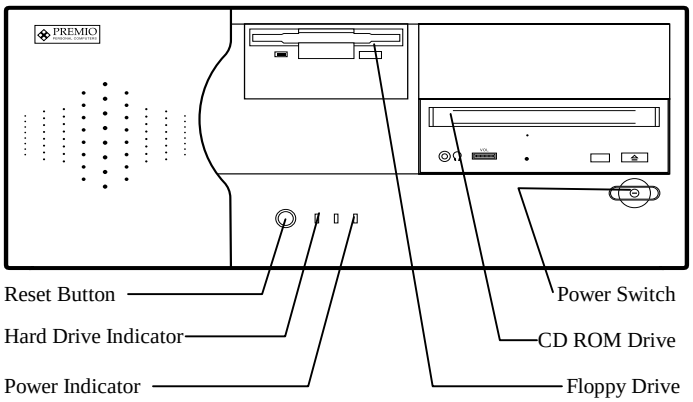
The illustration below shows a mid-tower system. If you have a desktop system, turn to the illustration on the next page.

Mid-tower system



- The **CD-ROM drive** reads information on CDs.
- The **floppy drive** reads and writes information on diskettes.
- The **power switch** turns the system on and off.
- The **hard drive indicator** lights when the hard drive is in use.
- The **power indicator** lights when the system is on.
- The **reset button** restarts the system.

Desktop system



- The **reset button** restarts the system.
- The **hard drive indicator** lights when the hard drive is in use.
- The **power indicator** lights when the system is on.
- The **power switch** turns the system on and off.
- The **CD-ROM drive** reads information on CDs.
- The **floppy drive** reads and writes information on diskettes.

Upgrading

You can upgrade your PREMIO system with:

- Expansion cards
- More memory
- An additional hard drive

To install an upgrade, you must open the system unit. Before proceeding, read the important cautionary note below. Then follow the steps on the next page.

Caution! *Static discharge can cause permanent damage to internal electronic components of your computer. Always use the following precautions when working inside the system unit:*

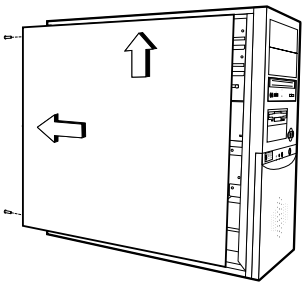
- *Wear a grounding wrist strap (available at most electronics stores) when handling electronic components.*
- *Do not remove a component from its antistatic packaging until you are ready to install it.*
- *Keep one hand in contact with the metal system case.*

Opening the System Unit

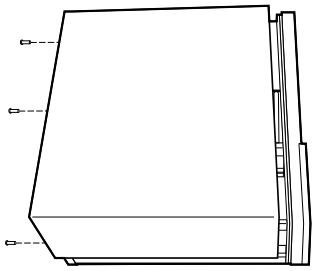
Note *Opening the system unit could affect your warranty. Check with the dealer where you purchased your system before opening the system unit.*

To open the system unit, follow these steps

Mid-tower system



Desktop system



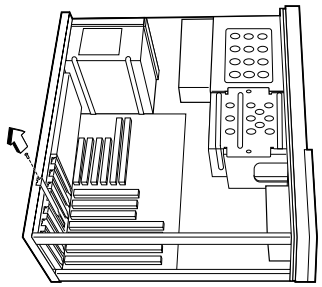
1 Turn off the system and unplug the power cord.

2 Remove the screws securing the side panel (mid-tower) or case (desktop) at the rear of the system unit.

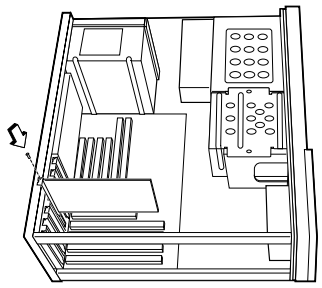
3 Slide the side panel or case up and to the rear, and remove it.

Installing an Expansion Card

To install an expansion card, open the system unit as described on the previous page. Then follow these steps:



1 Remove the screw securing the slot bracket cover for the expansion slot you want to use. Save the screw to secure the expansion card.



2 Insert the expansion card firmly into the slot, making sure it is seated completely.

3 Secure the card with the saved screw.

Installing Memory

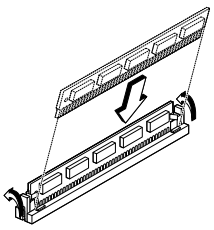
Note *For details on memory configuration, including the placement and type of memory to use in your system, refer to the motherboard user's manual that came with your system.*

Follow these general guidelines when adding memory:

- Use only the same type of memory throughout. For example, do not mix EDO and fast page memory.
- SIMMs must be installed in pairs, and both SIMMs in the pair must be the same size and speed. For example, do not install one 16-MB and one 8-MB SIMM.

Installing a SIMM

To install a SIMM, follow these steps:

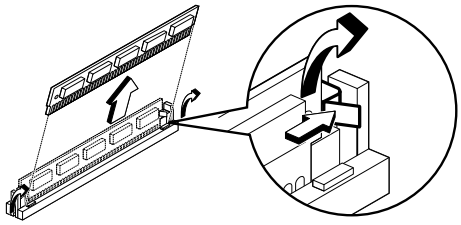


1. Insert the SIMM into the socket at a 45° angle. (SIMMs can be installed only one way.)
2. Gently press the SIMM up into a vertical position until it snaps into place. The SIMM's clips will hold it firmly at a 90° angle when it is properly installed.

Removing a SIMM

To remove a SIMM, follow these steps:

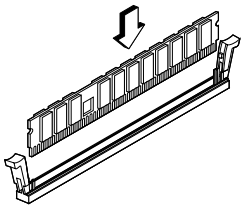
1. Press the holding clips on both sides of the SIMM outward to release it.



2. Tilt the SIMM to a 45° angle.
3. Pull the SIMM up and out of the socket.

Installing a DIMM

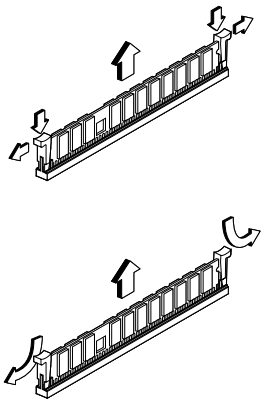
To install a DIMM, follow these steps:



1. Insert the DIMM vertically into the socket. (DIMMs can fit into the slot only one way.)
2. Push down on the DIMM to seat it, and then raise the plastic clips at either side to lock it in place.

Removing a DIMM

To remove a DIMM, follow these steps:



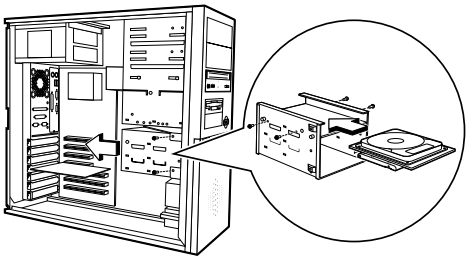
1 Push down and out on the plastic clips at either end to release them.

2 Pull the DIMM up and out of the socket.

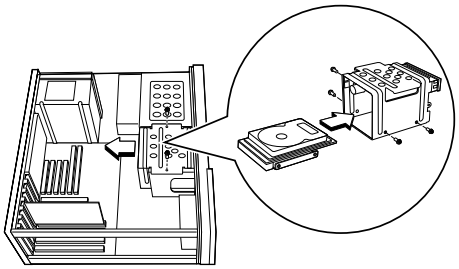
Installing a Hard Drive

To install a hard drive in your system, follow these steps:

Mid-tower system



Desktop system



1. Disconnect the hard drive cable and power connector.
2. Remove the two screws securing the drive bay.
3. Slide the bay toward the rear of the system unit to remove it.
4. Insert the new drive into an open position in the bay and secure it with four screws.
5. Slide the bay back into the system unit and secure it with two screws.
6. Connect the cables.

Getting Help

Troubleshooting

Your PREMIO system is designed to provide years of trouble-free performance. If you have a problem with your system, first check the information in this section for a quick solution.

Monitor Does Not Work

If your monitor appears not to be working properly:

- Check that the monitor's power cable is securely attached to the monitor and to an outlet that is receiving power.
- Check that the monitor's video cable is securely attached to the monitor and to the system unit's video card connector.
- Check that the monitor's power switch is on.
- Adjust the monitor's brightness and contrast controls.
- If possible, substitute another monitor that is in good working order. If the substitute works, your monitor may need repair or replacement.

Keyboard Does Not Work

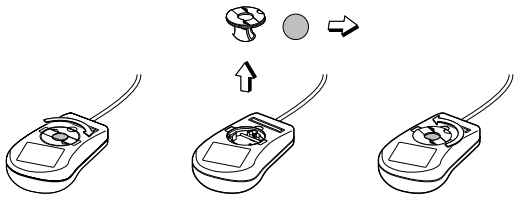
If the NumLock indicator in the upper right corner of the keyboard does not light when the system powers up, or the keyboard does not work:

- Check that the keyboard cable is securely attached to the system unit's keyboard connector.
- If possible, substitute another keyboard that is in good working order. If the substitute works, your keyboard may need replacement.

Mouse Does Not Work

If your mouse pointer does not move or moves erratically when you move the mouse:

- Check that the mouse cable is securely attached to the mouse connector on the system unit.
- Disassemble the mouse and clean the roller ball.



System Unit Problems

The fan inside the system unit should make a low, steady sound when operating properly. If the fan is totally silent:

- Check that the system power cord is securely attached to the back of the system unit and to a power outlet. Verify that the outlet has power.
- If possible, substitute another power cord that is in good working order. If the substitute works, replace your power cord.

If the fan makes excessive noise:

- Turn off the system, open the system unit case, and inspect the fan for any obstructions.
- Turn on the system and listen closely to the fan. If the noise comes from inside the fan housing, your power supply may need replacement.

Hard Disk Problems

Your hard disk should make a slight whirring sound when operating properly. If the disk is totally silent:

- Turn off the system, open the system unit case, and check that the power cable between the power supply and the hard disk is securely attached at both ends. If it is, your hard disk may be defective.

If the hard disk makes excessive noise:

- Turn off the system, open the system unit case, and remove the hard disk power cable connector from the hard disk. Then turn the system back on. If the noise disappears, your hard disk may be defective.
- If you have more than one hard disk, repeat the same procedure for each disk.

Warranty Service

If you have a problem with your PREMIO system that requires service during the warranty period, contact the dealer where you purchased your system. Your dealer will try to resolve the problem for you. If your dealer cannot resolve the problem, you can contact PREMIO directly at the address below.

Note *To obtain warranty service, you must provide proof of purchase, including the purchase date.*

Technical Support

You can contact PREMIO technical support at the following address:

Premio Computer, Inc.
918 Radecki Court
City of Industry, CA 91748

Telephone: 800-568-6388
Fax: 626-839-3191
Email: support@premiopc.com

PREMIO on the Internet

PREMIO maintains a web page on the Internet with the latest information on PREMIO products, updated drivers, answers to common problems, a Windows 95 troubleshooting guide, and more. Visit our web page at:

http://www.premiopc.com

Appendix

Limited 3-Year Warranty

Premio Computer, Inc. warrants its line of PREMIO® computer systems (hereinafter "Product") to be free from defects in material and workmanship for a period of three (3) years from the date of original purchase from Premio Computer, Inc. or a Premio Computer, Inc. authorized reseller. This warranty does not cover monitor and LCD panels, nor third-party hardware and software which has a separate manufacturer's warranty. Warranty for such third-party hardware and software, if any, is subject to the third-party's warranty policy.

PREMIO branded monitors are warranted as follows:
Three (3) year parts and labor except for CRT
One (1) year parts and labor for CRT

PREMIO branded LCD panels are warranted as follows:
One (1) year parts and labor

SERVICE UNDER WARRANTY

If this Product fails to be in good working order during this 3-year warranty period (or specific period of time as noted above), Premio Computer, Inc. will, at its option, repair or replace the Product. Repair parts and/or replacement Products may be either new or reconditioned at Premio Computer Inc.'s discretion. The limited warranty does not include service to repair damage from improper installation, abuse or modifications to the Product not approved in writing by Premio Computer, Inc. Any service repair outside the scope of this limited warranty shall be at Premio Computer, Inc.'s or its Authorized Service Provider's rates and terms in effect.

This warranty is valid only within the United States and applies only to Products which are new and in cartons which are unopened on the date of purchase.

EXCLUSIONS FROM PREMIO, INC. LIMITED WARRANTY PROGRAM

ALL OTHER EXPRESSED AND IMPLIED WARRANTIES FOR THIS PRODUCT, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, PREMIO COMPUTER, INC.'S SOLE AND EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT AS STATED ABOVE. IN NO EVENT WILL PREMIO COMPUTER, INC. BE LIABLE TO THE CUSTOMER OR ANY THIRD PARTY FOR ANY DAMEAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT. THIS LIMITATION APPLIES TO DAMAGES OF ANY KIND INCLUDING ANY DIRECT OR INDIRECT DAMAGES, LOST PROFITS, LOST SAVINGS OR OTHER SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES WETHER ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH PRODUCT, EVEN IF PREMIO COMPUTER, INC. OR AN AUTHORIZED PREMIO COMPUTER, INC. REPRESENTATIVE OR DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR OF ANY CLAIM BY ANY OTHER PARTY. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR SOME PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. PREMIO COMPUTER, INC. AUTHORIZED RESELLERS AND SERVICE PROVIDERS/PARTNERS MAY BE CHANGED, ADDED OR DELETED, WITHOUT NOTICE OR LIABILITY. PREMIO COMPUTER, INC. DISCLAIMS ANY AUTHORIZED RESELLERS AND SERVICE PROVIDER/PARTNER TO THE PROGRAM. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

FCC Standards

The FCC (Federal Communications Commission) restricts the amount of radiation and radio frequency emissions from computing equipment.

This equipment generates and uses radio frequency energy and if not installed and used properly in strict accordance with the operation instructions, reference manuals, and the service manual, may cause interference to radio or television reception.

This equipment can be tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC rules. There limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, then the user is encouraged to try to correct the interference by one or more of the following procedures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important Safety Instructions

These instructions are provided by Underwriters Laboratories, Inc.

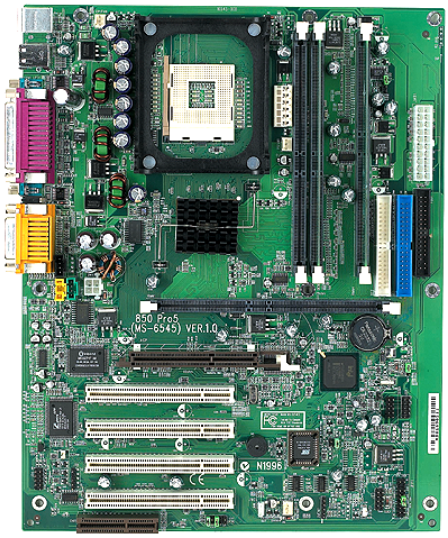
1. Read all of these instructions and save them for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
6. Slots and openings on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be walked on.
10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12. Except as explained elsewhere in this manual, don't attempt to service this product yourself. Opening and removing those covers that are marked “Do Not Remove” may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
    A. When the power cord or plug is damaged or frayed.
    B. If liquid has been spilled into the product.
    C. If the product has been exposed to rain or water.
    D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
    E. If the product has been dropped or the cabinet has been damaged.
    F. If the product exhibits a distinct change in performance, indicating a need for service.

MSI 850 Pro5

MICRO-STAR INTERNATIONAL

MS-6545 (v1.X) ATX Mainboard



Version 1.1
G52-MA00453

Manual Rev: 1.0
Release Date: Sept. 2001

CE N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Micro-Star International MS-6545

FC **Tested to comply with FCC Standard**

For Home or Office Use

Edition
Sept. 2001

Copyright Notice

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PS/2 and OS/2 are registered trademarks of IBM Corporation.
Windows 95 and Windows NT are registered trademarks of Microsoft.
Netware is a registered trademark of Novell.
Award is a registered trademark of Award Software Inc.

Revision History

Revision	Revision History	Date
V1.0	First release	Sept. 2001

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged
    - Liquid has penetrated into the equipment
    - The equipment has been exposed to moisture
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged
    - If the equipment has obvious sign of breakage
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

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Introduction 1

The 850 Pro5 (MS-6545 v1.X) ATX mainboard is a high-performance computer mainboard based on Intel® 82850 chipset. It is optimized to support Intel® Pentium® 4 processors for high-end business/personal desktop markets.

The Intel® 850 chipset supports 64-byte cache line size and a 32-bit host addressing, allowing the processor to access the chipset's memory address space. It also provides 4x AGP data transfers and AGP Fast Write capability.

The Intel® 850 chipset features a dual channel Direct RDRAM memory operating in lock-step using RSL technology. It is a highly-flexible chipset which is designed to extend the basic graphics/multimedia PC platform up to the mainstream performance desktop platform.

The Intel® 82801BA (ICH2) chipset is a highly integrated multifunctional I/O Controller Hub that provides the interface to the PCI Bus and integrates many of the functions needed in today's PC platforms. It communicates with the host controller over a dedicated hub interface and provides added flexibility in designing cost-effective system solutions.

This chapter includes the following topics:

Mainboard Specification	1-2
Mainboard Layout	1-4
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Mainboard Specification

CPU

- Supports Intel® Pentium® 4 processor in the 478 pin package.
- Supports 1.5GHz, 1.6GHz, 1.7GHz, 1.8GHz, 1.9GHz, 2GHz and up.

Chipset

- Intel® 82850 MCH (615 OLGA)
  - Supports Direct RDRAM up to 2GB maximum memory.
  - Supports 400 MHz system bus.
  - 1.5V AGP interface with 4x data transfer and 4x fast write capability.
- Intel® 82801BA ICH (360 EBGA)
  - Upstream hub interface for access to the Intel MCH.
  - 2-channel Ultra ATA/100 Bus Master IDE controller.
  - USB controller 1.1 (expanded capabilities for 4 ports).
  - I/O APIC.
  - SMBus controller.
  - FWH interface.
  - LPC interface.
  - AC'97 2.1 interface.
  - PCI 2.2 interface.
  - Integrated system management controller.

Main Memory

- Supports four 184-pin gold-lead RIMM sockets.
- Supports a maximum memory size of 2GB.

Slots

- One AGP (Accelerated Graphics Port) 4x slot.
- Four PCI 2.2 32-bit PCI bus slots (support 3.3v/5v PCI bus interface).
- One CNR (Communication Network Riser) slot.

On-Board IDE

- An IDE controller on the ICH2 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA100 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals

- On-Board Peripherals include:

- 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
- 2 serial ports (COM A + COM B).
- 1 parallel port supports SPP/EPP/ECP mode.
- 1 IrDA connector for SIR.
- 1 audio/game port.

USB Interface

- The mainboard comes with two optional USB interfaces:
  - 6 USB 1.1 ports (Rear * 2/ Front * 4, two with Intel spec & two with MSI spec).
  - 4 USB 1.1 ports (Rear * 2/ Front * 2, one regular USB 1.1 port and the other with USB PC to PC networking function).

Audio

- C-Media CMI8738 / PCI-6ch supports 2/4/6 ch speaker
  - 6CH DAC for AC3® 5.1CH purpose.
  - HRTF-based 3D positional audio, supporting DirectSound™ 3D and A3D™ interface.
  - Supports 4.1/5.1 speakers, C3DX positional audio in 4/6 CH speaker mode.
  - Legacy audio SBPRO™ compatible.
  - DLS-based wavetable music synthesizer.

BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- IDE drive auto configure, Advanced Power Management (APM) 1.2, ACPI 1.0, DMI 2.0, ECC/Parity support, LS120 support, auto enabled onboard SCSI termintor.

Dimension

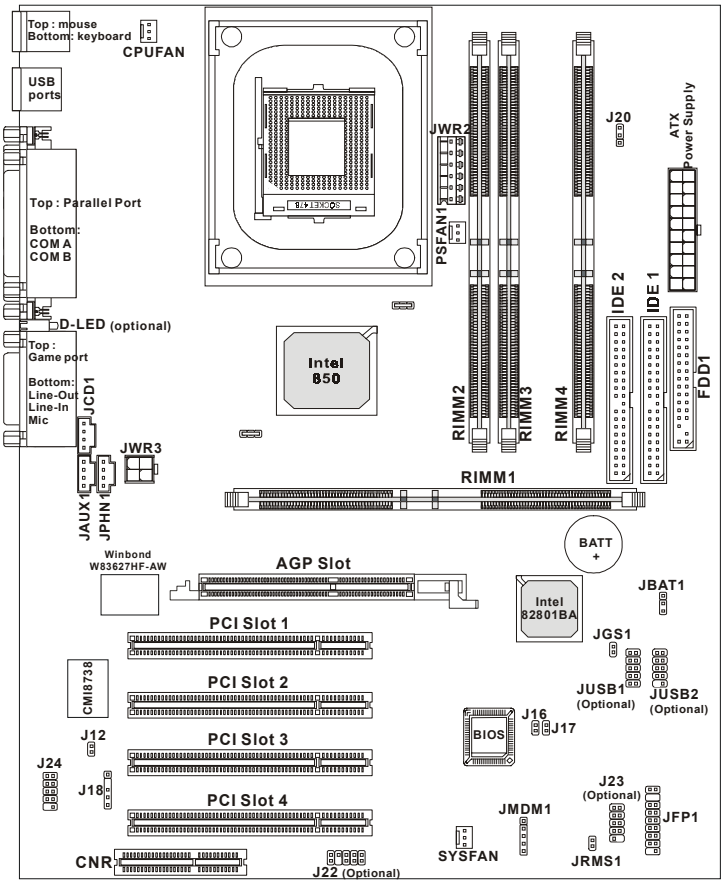
- ATX Form Factor: 30.4cm(L) x 24.3cm(W) x 4 layers PCB.

Mounting

- 9 mounting holes.

Chapter 1

Mainboard Layout



850 Pro5 (MS-6545 v1.X) ATX Mainboard

Quick Components Guide

Component	Function	Reference
JWR1/2/3	ATX power connectors	See p. 2-7
JKBMS1	Mouse/keyboard connector	See p. 2-9
USB Connectors	Connecting to USB devices	See p. 2-10
COM A & COM B	Serial port connector	See p. 2-11
LPT1	Parallel port connector	See p. 2-12
FDD1	Floppy disk drive connector	See p. 2-13
JRMS1	Remote power on/off switch	See p. 2-13
IDE1~ IDE2	Hard disk connectors	See p. 2-14
JFP1/J23	Front panel connector	See p. 2-15
JCD1/JAUX1/JPHN1	CD/AUX/Modem-in connectors	See p. 2-16
CPU/PS/SYS FAN	Fan power connectors	See p. 2-17
JMDM1	Wake on ring connector	See p. 2-18
JGS1	Power saving switch connector	See p. 2-18
J18	IrDA infrared module connector	See p. 2-19
J12	Chassis intrusion switch connector	See p. 2-19
J22	Front panel audio connector	See p. 2-20
JUSB1/JUSB2	Connecting to USB devices	See p. 2-21
J24	D-Bracket connector	See p. 2-25
JBAT1	Clear CMOS jumper	See p. 2-27
J20	RDRAM over voltage jumper	See p. 2-28
J17	Clear BIOS password jumper	See p. 2-29
J16	BIOS flash jumper	See p. 2-29
AGP Slot	Connecting to AGP cards	See p. 2-30
PCI Slots	Connecting to expansion cards	See p. 2-30
CNR Slot	Connecting to expansion cards	See p. 2-30

Key Features

- ATX Form Factor
- CPU: Intel® Pentium® 4 processor in the 478 pin package
- Smart Key - the best solution to prevent unauthorized access to your PC (Optional)
- USB PC to PC networking function (Optional)
- Fuzzy Logic 3
- Live BIOS / Live Driver
- CMI8738/PCI-6ch supports 2/4/6 ch. speaker
- PC Alert™ III system hardware monitor
- D-LED/ D-Bracket (Optional)
- Modem (Internal/External) Ring Wake Up Function
- Suspend to RAM/Disk
- PC2001 Compliant

MSI Special Features

T.O.P Tech™

The T.O.P Tech™ is an extended sensing device that can 100% accurately detect the CPU's temperature. You can find out the temperature on BIOS setup menu. The PC Alert™ also provides the information.

CPU temperaure on Setup menu

CMOS Setup Utility - Copyright(C) 1984-2001 Award Software
PC Health Status

CPU Warning Temperature [Disabled] Current System Temp. Current CPU Temperature Current Top Tech. III Temp. SYSTEM fan POWER fan CPU fan Vcore VTT 3.3V +5V +12V -12V -5V VBAT(V) 5VSB(V) Chassis Intrusion Detect [Disabled] Shutdown Temperature [Disabled]	Item Help Menu Level >

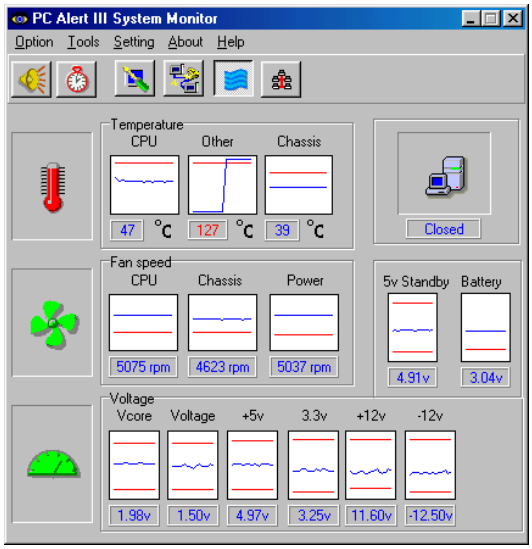
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

PC Alert™ III

The PC Alert™ III is a utility you can find in the CD-ROM disk. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

* monitor CPU & system temperatures
* monitor fan speed(s)
* monitor system voltage
* monitor chassis intrusion

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown,until user disables the warning.



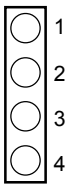
Note: *Items shown on PC Alert III vary depending on your system's status.*

Features:

- Network Management
  - Monitoring & remote control
- Basic System Utilities
  - Scandisk & Defragment to maintain your HDD
- 3D Graphics Design
  - Enables a more friendly user interface
- Sofware Utilities
  - SoftCooler Optimized Cooling

D-LED™ & D-Bracket™ (Optional)

The D-LED™ uses graphic signal display to help users understand their system. Four LEDs embedded in the mainboard provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

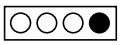


Diagnostic LED

The D-Bracket™ which integrates four Diagnostic LEDs is optional. Definitions of the D-Bracket™ LED signals are the same as D-LED™ as shown below.

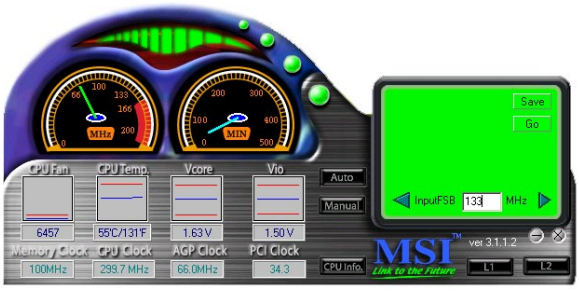
● **Red** ○ **Green**

D-LED	D-Bracket	Description
1 2 3 4 ●●●●	1 ●● 2 3 ●● 4	System Power ON - The D-LED will hang here if the processor is damaged or not installed properly.
○●●●	○● ●●	Early Chipset Initialization
●○●●	●○ ●●	Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
○○●●	○○ ●●	Decompressing BIOS image to RAM for fast booting.
●●○●	●● ○●	Initializing Keyboard Controller.
○●○●	○● ○●	Testing VGA BIOS - This will start writing VGA sign-on message to the screen.

D-LED	D-Bracket	Description
		Processor Initialization - This will show information regarding the processor (like brand name, system bus, etc…)
		Testing RTC (Real Time Clock)
		Initializing Video Interface - This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
		BIOS Sign On - This will start showing information about logo, processor brand name, etc.…
		Testing Base and Extended Memory - Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
		Assign Resources to all ISA.
		Initializing Hard Drive Controller - This will initialize IDE drive and controller.
		Initializing Floppy Drive Controller - This will initializing Floppy Drive and controller.
		Boot Attempt - This will set low stack and boot via INT 19h.
		Operating System Booting

Fuzzy Logic™ III

The Fuzzy Logic™ III utility allows users to overclock the CPU FSB (Front Side Bus) frequency in the Windows environment. Select the CPU frequency you prefer and click *Go* to apply the frequency or click *Save* allowing the system to run at the specified frequency each time when the system is powered on.



Features:

- Display Current System Status
  - CPU Fan
  - CPU Temp.
  - Vcore
  - Vio
  - Memory Clock
  - CPU Clock
  - AGP Clock
  - PCI Clock
- Adjust CPU FSB Frequency

Live BIOS™/Live Driver™

The Live BIOS™ is a tool used to detect and update your BIOS online so that you don't need to search for the correct BIOS version through the whole web site. To use the function, you need to install the "MSI Live Update Series" application. After installation, the "MSI Live Update Series" icon (as the right view) will appear on the screen.

Double click the "MSI Live Update Series" icon, and the following screen will appear.

MSI
Link to the Future
MSI Live Update Series
Visit MSI WebSite
Headquarters
Live BIOS
Live Driver
Live VGA BIOS
Live VGA Driver
Micro-Star International (MSI)
Live Update Series
MSI "Live Update Series" is a useful and powerful application for you to download and update the BIOS and the Device Drivers automatically. You do not have to spend much time in searching the whole website to find the BIOS or drivers you want. With MSI Live Update Series, you can complete it in several simple steps.
Please select the items that you want to do on the left column of the main page.
Copyright(C) by Micro-Star International All Rights Reserved(R)

Four buttons are placed on the left column of the screen. Click the desired button to start the update process.

- **Live BIOS** – Updates the BIOS online. If your motherboard does not support the function, the "sorry" message is displayed.
- **Live Driver** – Updates the drivers online. If your motherboard does not support the function, the "sorry" message is displayed.
- **Live VGA BIOS** – Updates the VGA BIOS online. If your VGA device does not support the function, the "sorry" message appears.
- **Live VGA Driver** – Updates the VGA driver online. If your VGA device does not support the function, the "sorry" message is displayed.

For more information on the update instructions, insert the companion CD and refer to the "Live Update Series Guide" under the "Manual" tab.

2 Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

This chapter contains the following topics:

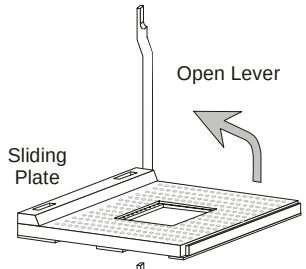
Central Processing Unit: CPU	2-2
Memory Installation	2-5
Power Supply	2-7
Back Panel	2-9
Connectors	2-13
Jumpers	2-27
Slots	2-30

Central Processing Unit: CPU

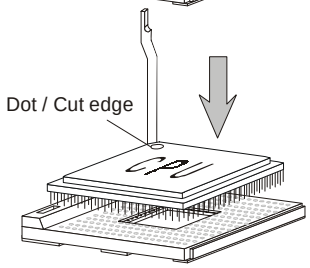
The mainboard supports Intel® Pentium® 4 processor in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Installation Procedures

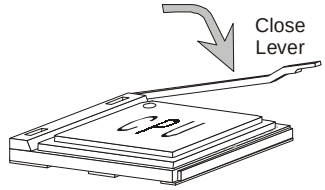
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.



2. Look for the dot/cut edge. The dot/cut edge should point towards the lever pivot. The CPU will only fit in the correct orientation.



3. Hold the CPU down firmly, and then close the lever to complete the installation.

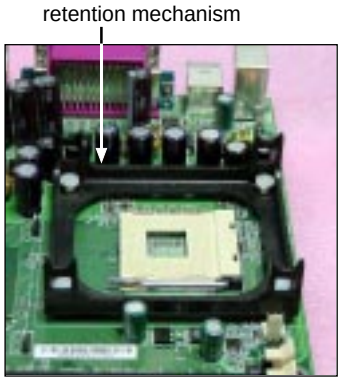


WARNING! *Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.*

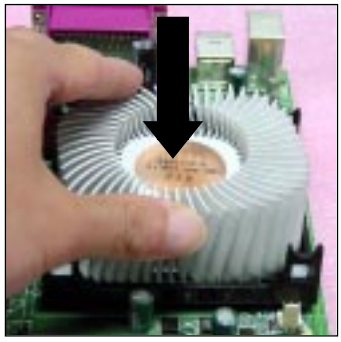
Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal managment becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

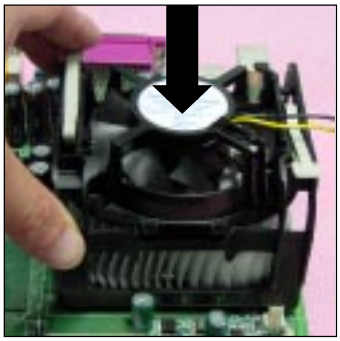
1. Locate the CPU and its retention mechanism on the motherboard.



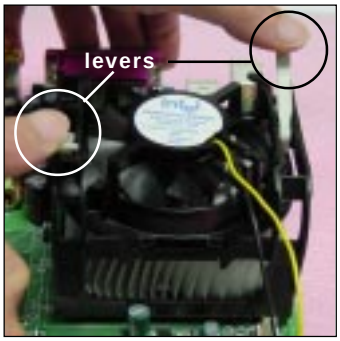
2. Position the heatsink onto the retention mechanism.



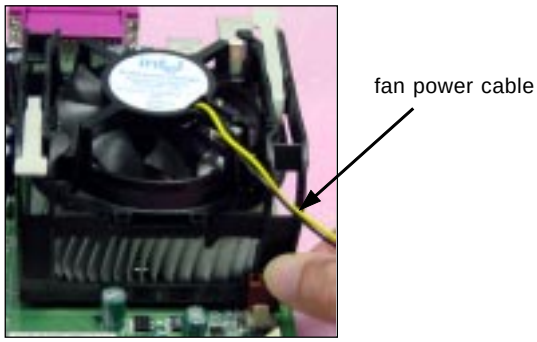
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.



4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.



5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.



CPU Core Speed Derivation Procedure

If	CPU Clock	=	100MHz
	Core/Bus ratio	=	14
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 14
		=	1.4GHz

STOP

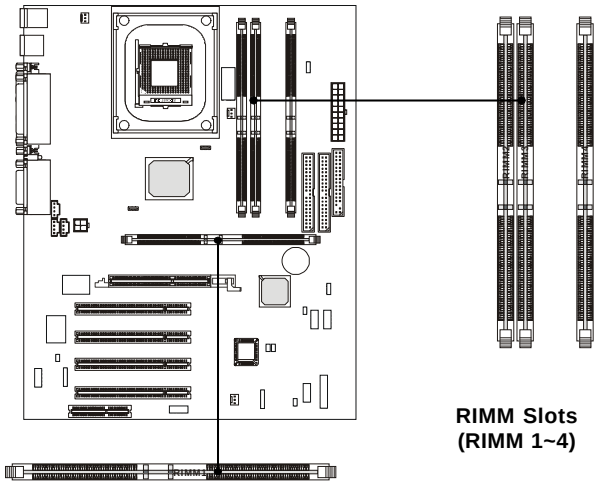
WARNING!

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Memory Installation

The mainboard provides 4 gold-lead sockets for 184-pin RIMM modules. To operate properly, at least two RIMM modules must be installed. The mainboard supports the memory size up to 2 GB.



Memory Population Rules

- Support RIMM only.
- To operate properly, make sure that the RIMM banks are using the same type and equal size density memory.
- Support FSB 100MHz: PC600/PC800 RIMM.

  Note: *PC700 will run at PC600 specification.*
- Support up to 32 Direct Rambus Device.
- Support ECC Single bit Correction and Multiple bit error detection (Setting in BIOS).
- Install two RIMM modules either on “RIMM 1and RIMM 2” or on “RIMM3 and RIMM4” slots.

About RIMM Module

RIMM module is a module integrated with RDRAM chips. It is similar to a DIMM package but uses different pin settings. Rambus trademarked the term RIMM as an entire word for a module using Rambus technology.

Installing RIMM Modules

You can install two or four RIMM modules in the following combination:

DIMM Socket	Memory Module	Total Memory
Socket 1 (Bank 0 & Bank 1)	32MB, 64MB, 128MB, 256MB, 512MB	32MB ~ 512MB
Socket 2 (Bank 2 & Bank 3)	32MB, 64MB, 128MB, 256MB, 512MB	32MB ~ 512MB
Socket 3 (Bank 4 & Bank 5)	32MB, 64MB, 128MB, 256MB, 512MB	32MB ~ 512MB
Socket 4 (Bank 6 & Bank 7)	32MB, 64MB, 128MB, 256MB, 512MB	32MB ~ 512MB
Total System Memory		64MB ~ 2GB

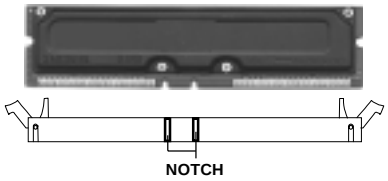
Note: If only two RIMM slots are populated, you must install C-RIMM (Continuity RIMM) modules on the other unused RIMM slots. A C-RIMM module is a dummy module for continuing the signal connection.

C-RIMM Module

1. The RIMM slot has 2 Notch Keys, so the RIMM memory module can only fit in one orientation.

RIMM Module

2. Insert the RIMM memory module vertically into the RIMM slot. Then push it in.



3. The plastic clips at sides of the RIMM slot will automatically close.

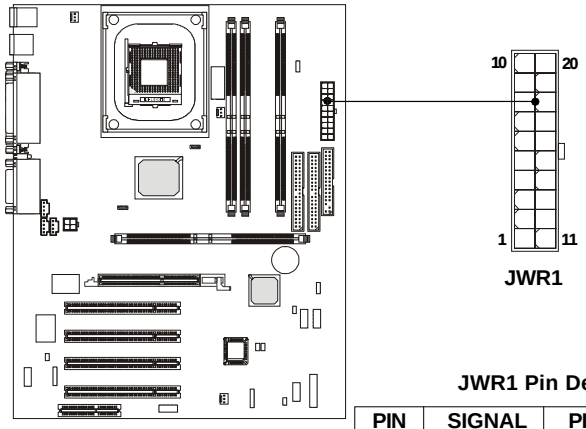
4. If you won't insert any RIMM modules on the other two RIMM slots, you must install C-RIMM modules on the empty slots.

Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector: JWR1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plugs of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector. The power connector supports **instant power on** function which means that system will boot up immediately when the power supply connector is inserted on the board.



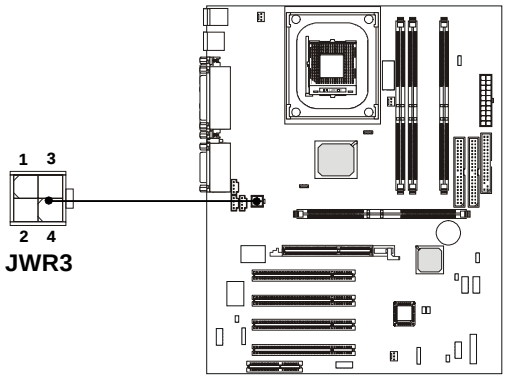
JWR1

JWR1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

ATX 12V Power Connector: JWR3

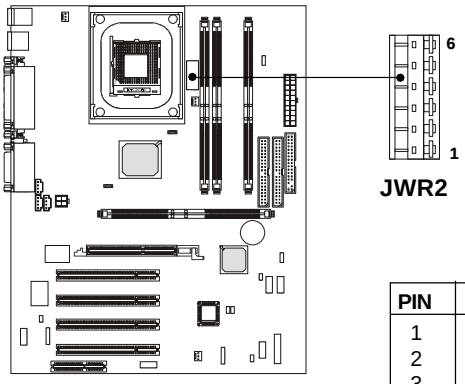
Attaching the ATX power supply to the connector help offer sufficient voltage to Pentium 4 CPU. This power connector also supports **instant power on** function.



PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

ATX 5V/3V Power Connector: JWR2

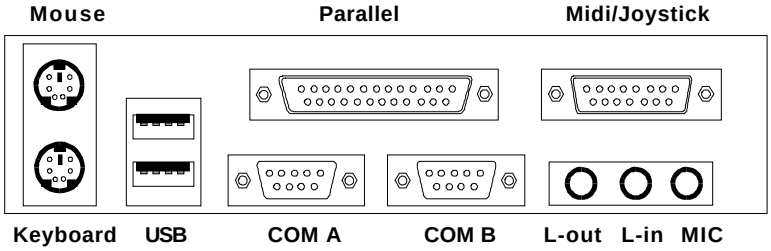
The mainboard provides an extra 5V/3V power connector for you to connect to the ATX power supply.



PIN	SIGNAL	PIN	SIGNAL
1	GND	4	3.3V
2	GND	5	3.3V
3	GND	6	5V

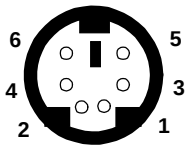
Back Panel

The Back Panel provides the following connectors:



Mouse Connector: JKBMS1

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin assignments are as follows:



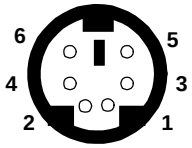
PS/2 Mouse (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard. You can plug a PS/2® keyboard directly into this connector.



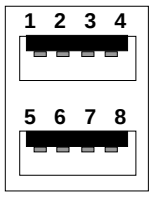
PS/2 Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into ths connector.



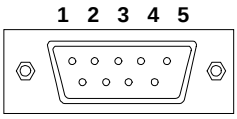
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Serial Port Connector: COM A & COM B

The mainboard offers two 9-pin male DIN connectors for serial port COM A and COM B. The ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to them.



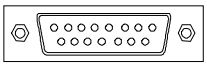
9-Pin Male DIN Connectors

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Joystick/Midi Connectors

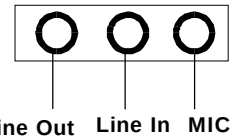
You can connect a joystick or game pad to this connector.



Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

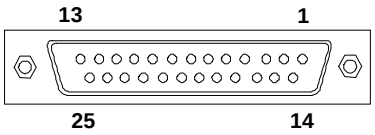
1/8" Stereo Audio Connectors



Note: Details on the application of 6-channel audio can be acquired by installing the CMI8738 Audio Driver on the CD-ROM (enclosed in the product package).

Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector for LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

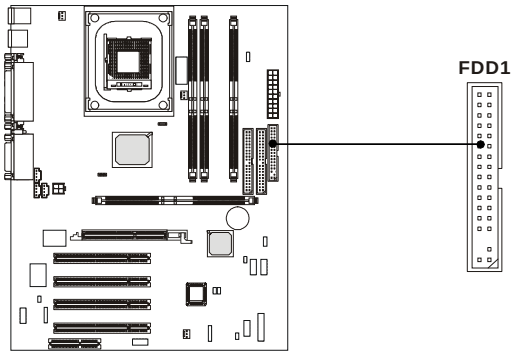
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, modem, LAN, USB Ports, IR module and CPU/System FAN.

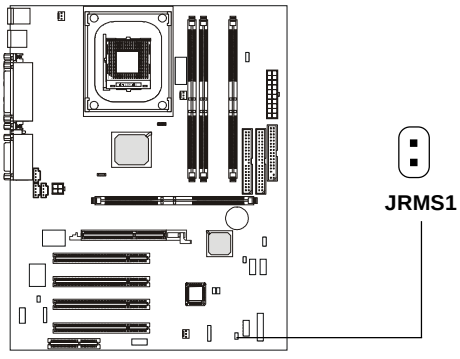
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



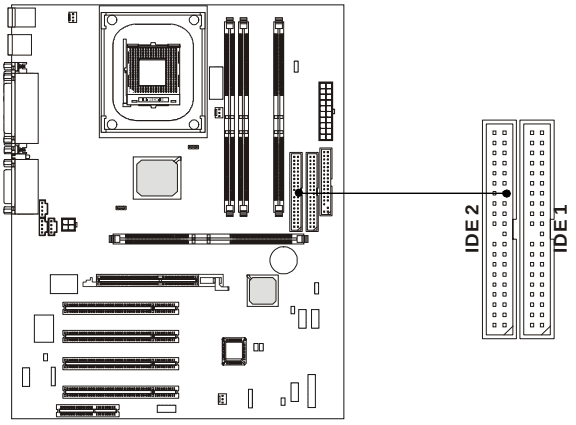
Remote Power On/Off Switch Connector: JRMS1

Connect to a 2-pin push button switch. When OFF, pressing the button can turn the system on. When ON, pressing the button once will make the system enter the sleep/suspend state. If the button is pressed for more than four seconds, the system will be turned off. To change the setup, go to the BIOS Power Management Setup.



Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

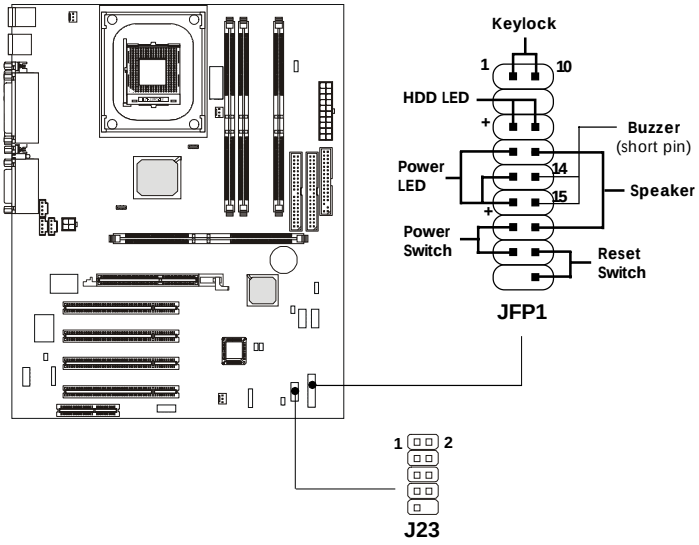
IDE2 can also connect a Master and a Slave drive.

TIP:

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Front Panel Connector: JFP1 or J23 (Optional Intel spec)

This connector is for electrical connection to the front panel switches and LEDs.



(Optional Intel spec)

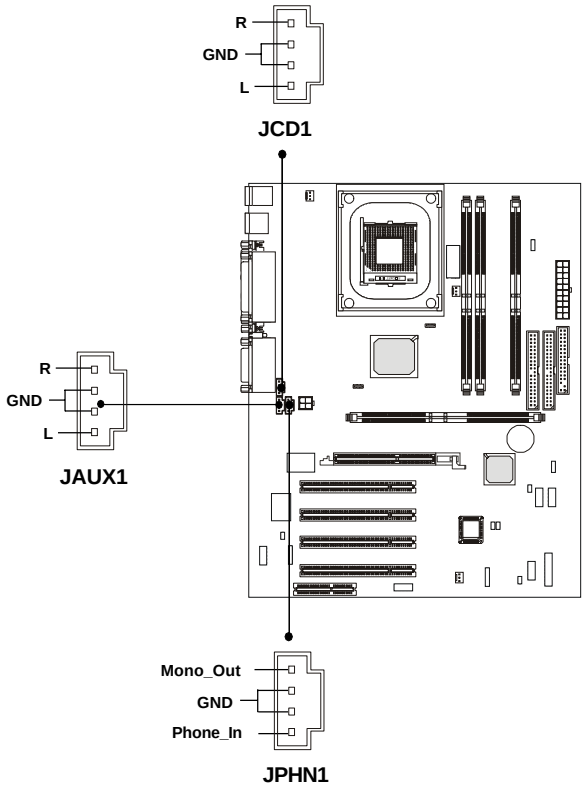
J23 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_1	Reset Switch 1
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_2	Reset Switch 2
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Note: The RST_SW_1 and RST_SW_2 signals should be connected to the Reset Switch independently from other signals (HDD, PWR, GND,...) on the J23 Front Panel Connector.

CD-In/Aux-In/Modem-In Connector: JCD1/JAUX1/JPHN1

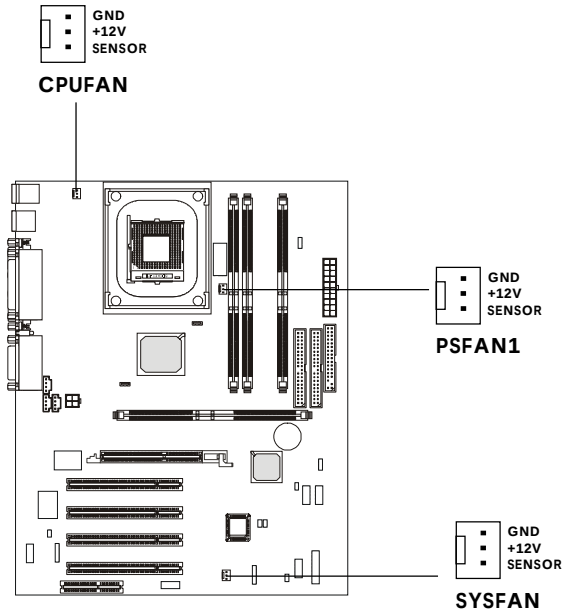
JCD1 connector is for CD-ROM audio connector.
JAUX1 connector is for DVD add-on card with Line-in connector.
JPHN1 connector is for modem with internal audio connector.



Note:
Mono_Out is connected to the Modem speaker-out connector.
Phone_In is connected to the Modem Microphone-In connector.

Fan Power Connectors: CPUFAN/SYSFAN/PSFAN

The CPUFAN (processor fan), SYSFAN (system fan) and PSFAN1 (power supply fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



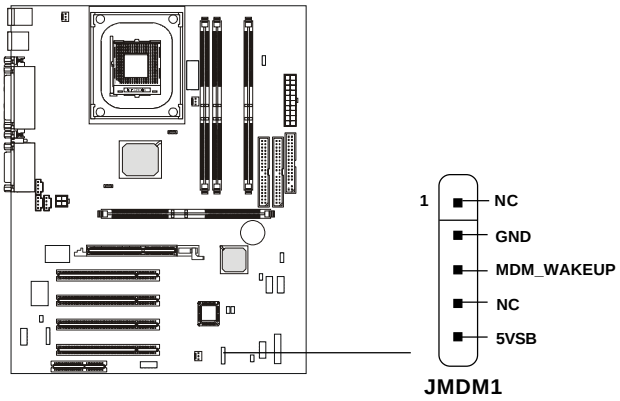
Note:

1. Always consult the vendor for proper CPU cooling fan.

2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temeperature.

Wake On Ring Connector: JMDM1

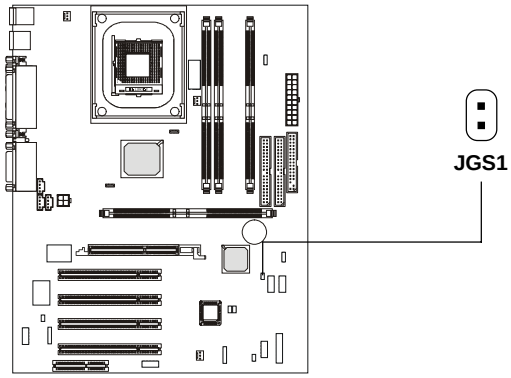
This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



Note: *Modem wake-up signal is active "low".*

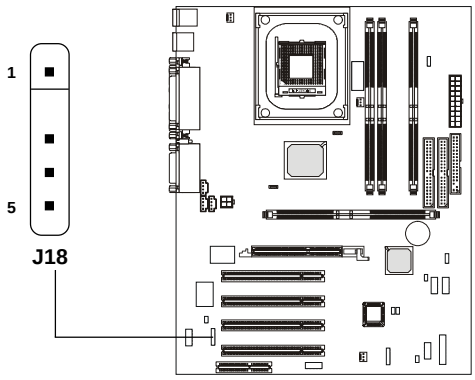
Power Saving Switch Connector: JGS1

Attach a power saving switch to this connector. Pressing the switch once will have the system enter the sleep/suspend state. Press any key to wake up the system.



IrDA Infrared Module Connector: J18

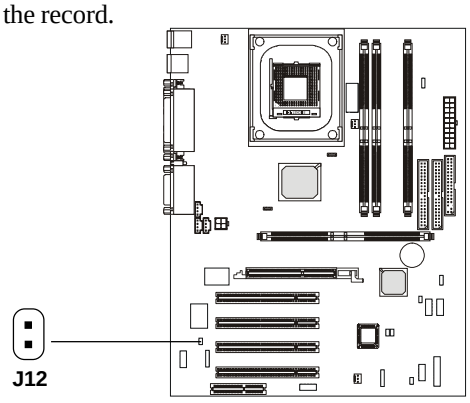
This connector allows you to connect to an IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.



Pin	Signal
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX

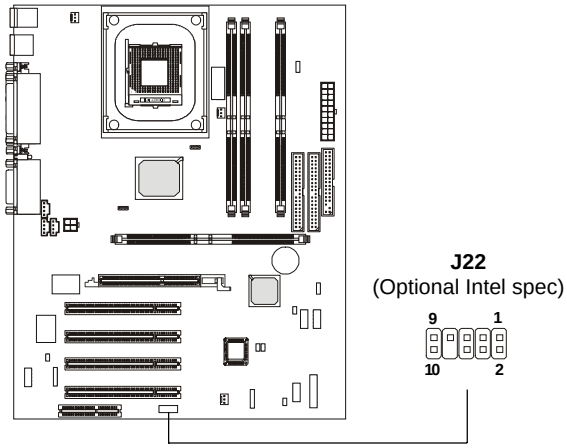
Chassis Intrusion Switch Connector: J12

The connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



Front Panel Audio Connector: J22 (Optional Intel spec)

This connector allows you to connect to the front panel audio.



Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

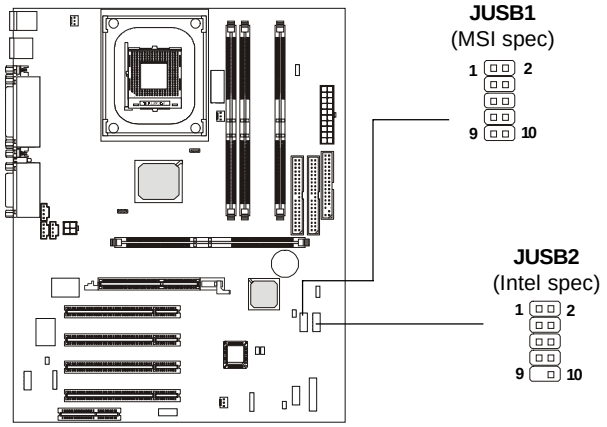
Front USB Connectors: JUSB1 & JUSB2

Depending on users' request, the mainboard can provide ONE or TWO USB (Universal Serial Bus) pin headers that allow you to connect optional USB ports for front panel.

- **Option 1**

  JUSB1: MSI spec

  JUSB2: Intel spec/compliant with Intel® I/O Connectivity Design Guide



JUSB1 Pin Definition

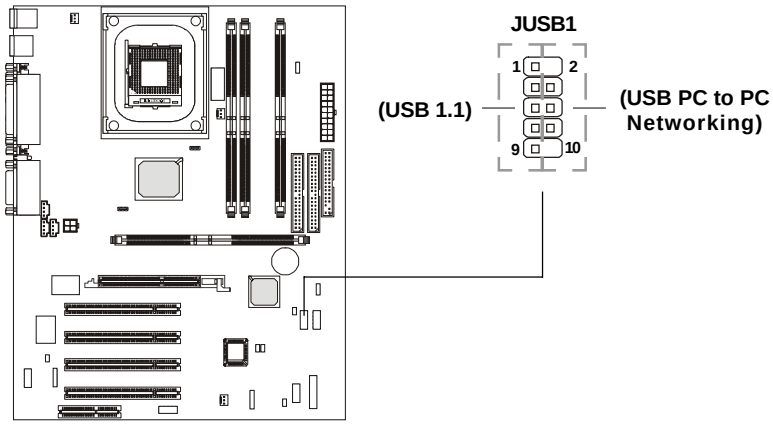
Pin	Description	Pin	Description
1	VCC	2	GND
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	VCC

JUSB2 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	NC	10	OC0

Option 2

JUSB1: USB PC to PC networking function



JUSB1 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	NC
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	NC

Note: *USB PC to PC Networking feature allows users to transfer and receive data from other computers or share system resources with others without using any network adapter. See below for instructions.*

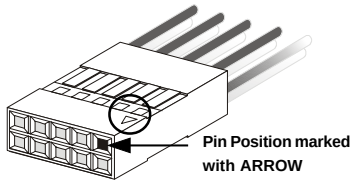
To Attach the USB PC to PC cable

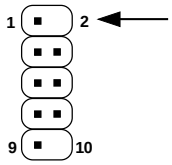
1. Check whether the package includes the following items. If any is missing, contact your dealer.

USB PC to PC Bracket

USB PC to PC Cable

2. Connect the USB Bracket's cable to the JUSB1 pin header on the mainboard. Locate the pin position marked with the ARROW on the connector of USB Bracket and Pin# 2 of JUSB1. Then align the marked pin position with Pin# 2 to attach the USB Bracket.





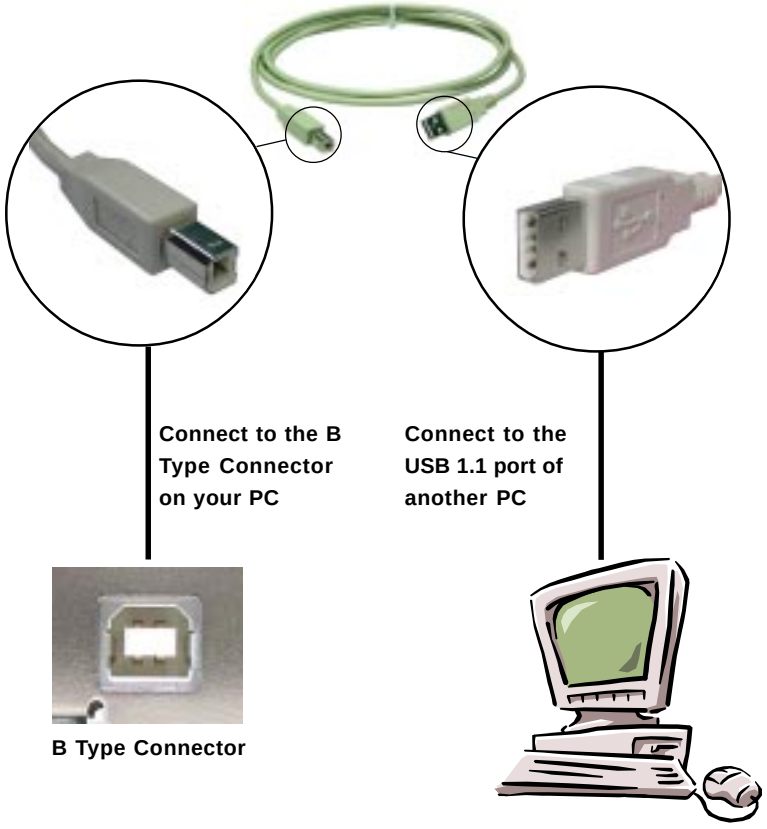
JUSB1

3. Identify the **B Type Connector** on the bracket used for PC to PC Networking function.

B Type Connector **for PC to PC Networking**

A Type Connector **for attaching USB 1.1 Peripherals**

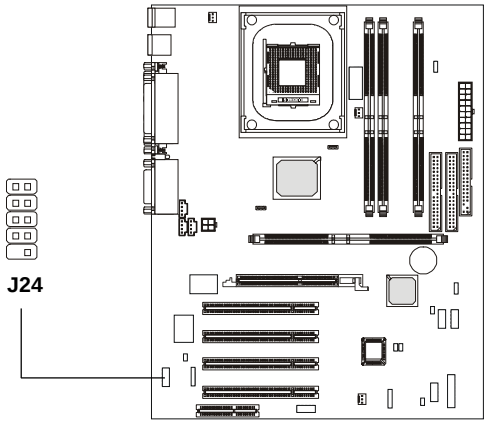
4. Connect your PC to another PC via USB PC to PC cable. The transfer rate will run at USB 1.1 speed (12Mbps/s).



For more information on USB PC to PC Networking function, refer to Appendix A: USB PC to PC Networking Function.

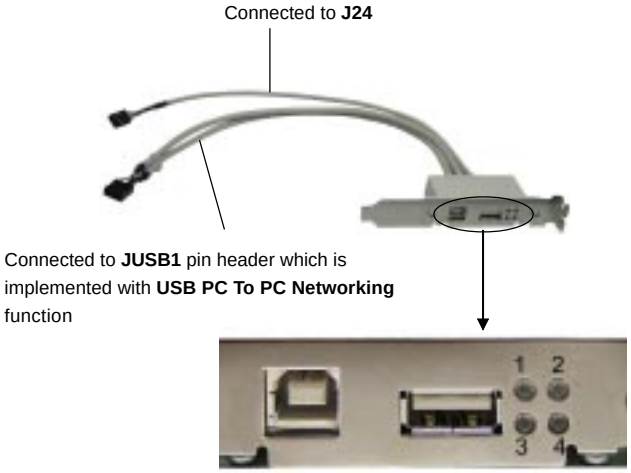
D-Bracket™ Connector: J24

The mainboard comes with a J24 connector for you to connect to D-Bracket™. D-Bracket™ is a USB Bracket integrating four LEDs whose functions are similar to D-LED™ and allows users to identify system problem through 16 various combinations of LED signals. For definitions of 16 signal combinations, please refer to Chapter 1. *D-LED™ & D-Bracket™*.

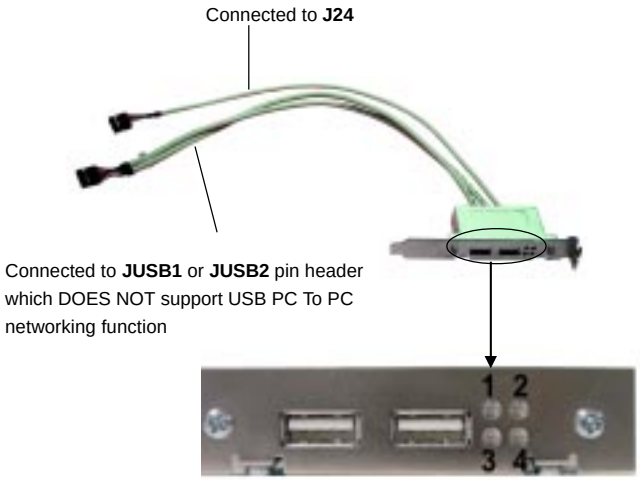


There are two types of D-Bracket™: one supports USB PC to PC Networking function, and the other doesn't (see photos on the next page). You can purchase the one you need from your dealer.

- **D-Bracket™ with one USB PC to PC port and one regular USB port**



- **D-Bracket™ with two regular USB ports**

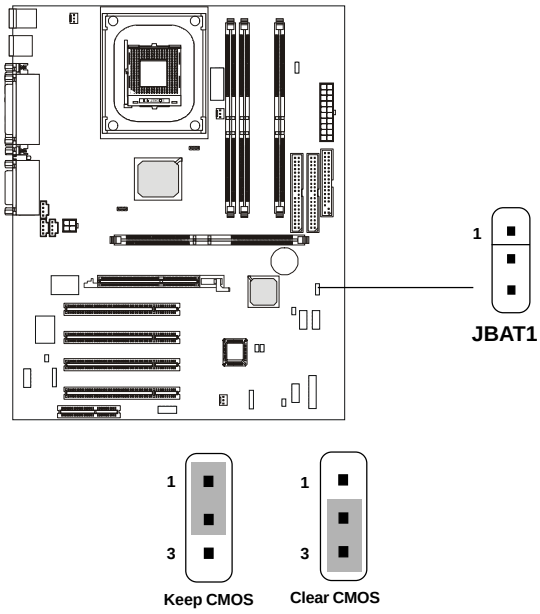


Jumpers

The motherboard provides one jumper for you to set the computer's function. This section will explain how to change your motherboard's function through the use of the jumper.

Clear CMOS Jumper: JBAT1

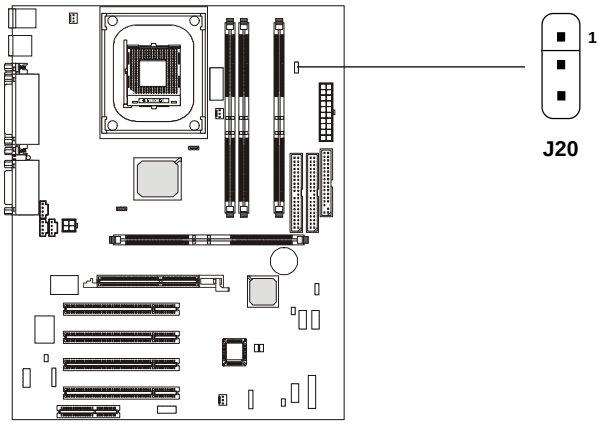
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. That battery has long life time for at least 5 years. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

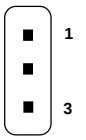


WARNING! *You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

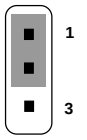
RDRAM Over Voltage Jumper: J20

The jumper is used to set the RDRAM voltage for overclocking purpose.

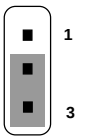




Normal
(2.5V)



Over Voltage
(2.58V)



Over Voltage
(2.68V)

WARNING!

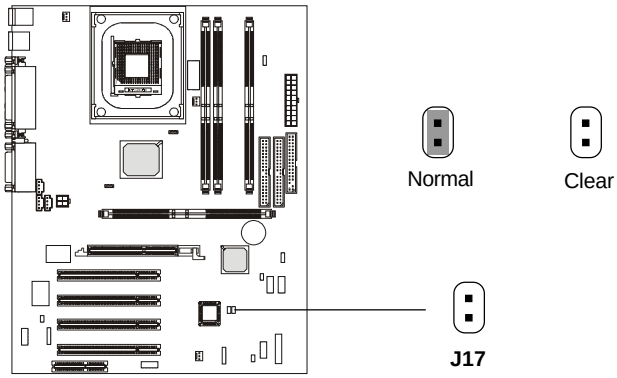
Over Voltage

This motherboard is designed to support over voltage. However, please make sure your components are able to tolerate such abnormal setting, while doing over voltage. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Avoid setting J20 while the sytem is on. It will damage the RDRAM.

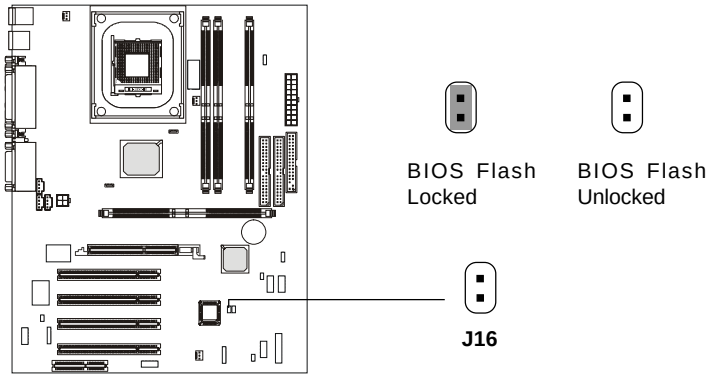
Clear BIOS Password Jumper: J17

The jumper is used to clear the BIOS password. To clear the password, open the jumper and restart your computer.



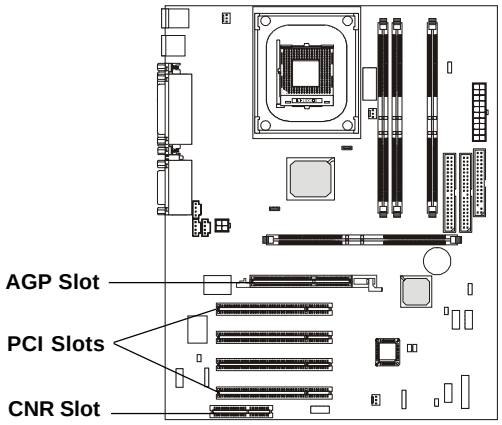
BIOS Flash Jumper: J16

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area cannot be updated.



Slots

The motherboard provides four 32-bit Master PCI Bus Slots, one AGP and one CNR slot.



AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card only. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot only supports **1.5V 4x** AGP card.

PCI Slots

Four PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CNR (Communication Network Riser) Slot

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed network, audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset.

PCI Interrupt Request Routing

The IRQ, abbreviation of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT C#	INT F#	INT G#	INT A#
PCI Slot 2	INT F#	INT G#	INT A#	INT C#
PCI Slot 3	INT G#	INT A#	INT C#	INT F#
PCI Slot 4	INT A#	INT C#	INT F#	INT G#

AWARD® BIOS Setup 3

The mainboard uses AWARD® BIOS ROM that provides a Setup utility for users to modify the basic system configuration. The information is stored in a battery-backed CMOS RAM so it retains the Setup information when the power is turned off.

This chapter provides you with the overview of the BIOS Setup program. It contains the following topics:

Entering Setup	3-2
Control Keys	3-2
Getting Help	3-3
The Main Menu	3-4
Standard CMOS Features	3-6
Advanced BIOS Features	3-8
Advanced Chipset Features	3-12
Integrated Peripherals	3-14
Power Management Setup	3-19
PNP/PCI Configurations	3-23
PC Health Status	3-25
Frequency/Voltage Control	3-26
High System Performance	3-28
Load Optimized Defaults	3-29
Set Supervisor/User Password	3-30
Save & Exit Setup	3-32
Exit Without Saving	3-33

Chapter 3

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

```
Press DEL to enter SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help

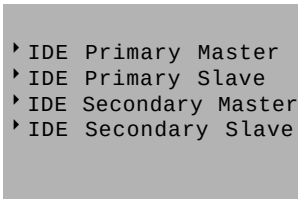
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu containing additional options can be launched from this field. You can use control keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press <Esc >.



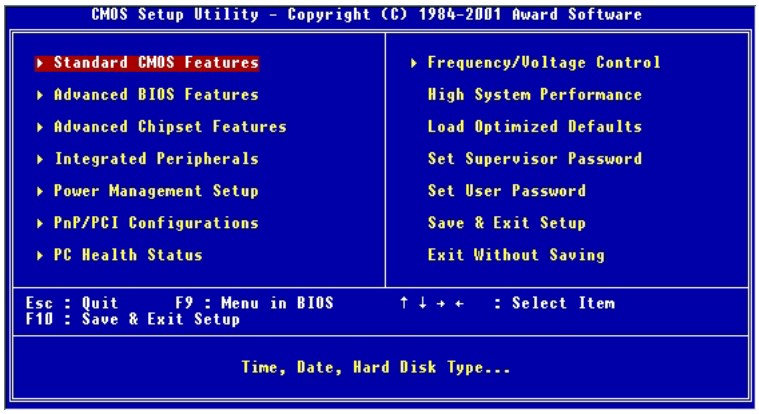
General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

Chapter 3

The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



Standard CMOS Features
Use this Menu for basic system configurations.

Advanced BIOS Features
Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PnP/PCI Configurations
This entry appears if your system supports PnP/PCI.

PC Health Status
This entry shows your PC health status.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

High System Performance
Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

Load Optimized Defaults
Use this menu to load factory default settings into the BIOS for optimal and stable system operations.

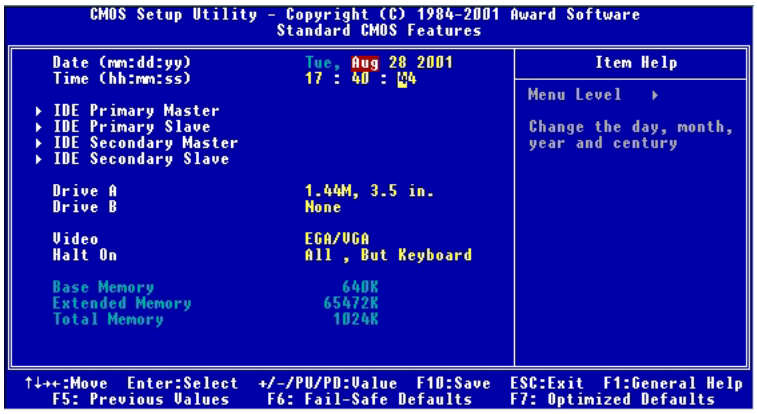
Supervisor/User Password
Use this menu to set User and Supervisor Passwords.

Save & Exit Setup
Save CMOS value changes to CMOS and exit setup.

Exit Without Saving
Abandon all CMOS value changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.


CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Standard CMOS Features
Date (mm:dd:yy) Tue, Aug 28 2001
Time (hh:mm:ss) 17 : 40 : 44
IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave
Drive A 1.44M, 3.5 in.
Drive B None
Video EGA/VGA
Halt On All , But Keyboard
Base Memory 640K
Extended Memory 65472K
Total Memory 1024K
Item Help
Menu Level ▸
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Date

The date format is <day><month> <date> <year>.

day Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month The month from Jan. through Dec.
date The date from 1 to 31 can be keyed by numeric function keys.
year The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.

If you select Manual, related information is asked to be entered to the follow-

ing items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be "None".
If the controller of HDD interface is CD-ROM, the selection shall be "None".

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

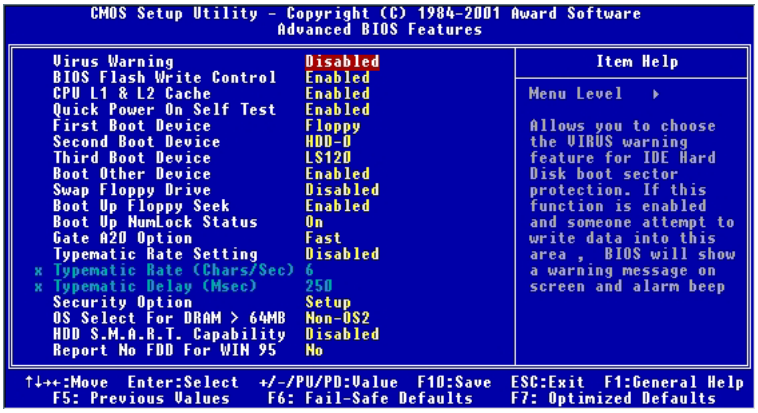
Drive A/B
This item allows you to set the type of floppy drives installed. Available options are *None*, *360K, 5.25 in.*, *1.2M, 5.25 in.*, *720K*, 3.5 in., *1.44M, 3.5 in., 2.88M, 3.5 in.*

Video
The setting controls the type of video adapter used for the primary monitor of the system. Available options are *EGA/VGA* , *CGA 40*, *CGA 80* and *Mono*.

Halt On
The setting determines whether the system will stop if an error is detected at boot. Available options are:

All Errors	The system stops when any error is detected.
No Errors	The system doesn't stop for any detected error.
All, But Keyboard	The system doesn't stop for a keyboard error.
All, But Diskette	The system doesn't stop for a disk error.
All, But Disk/Key	The system doesn't stop for either a disk or a keyboard error.

Advanced BIOS Features


CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Advanced BIOS Features
Virus Warning Disabled
BIOS Flash Write Control Enabled
CPU L1 & L2 Cache Enabled
Quick Power On Self Test Enabled
First Boot Device Floppy
Second Boot Device HDD-0
Third Boot Device LS120
Boot Other Device Enabled
Swap Floppy Drive Disabled
Boot Up Floppy Seek Enabled
Boot Up NumLock Status On
Gate A20 Option Fast
Typematic Rate Setting Disabled
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option Setup
OS Select For DRAM > 64MB Non-OS2
HDD S.M.A.R.T. Capability Disabled
Report No FDD For WIN 95 No
Item Help
Menu Level ▸
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarm beep
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Virus Warning
The setting is to set the virus warning feature for IDE hard disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on the screen and beep. Setting options: *Disabled*, *Enabled*.

BIOS Flash Write Control
This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When disabled, the BIOS' data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you'll need to enable this BIOS Flash Write Control function. Setting options: *Disabled, Enabled*.

CPU L1 & L2 Cache
Cache memory is additional memory that is much faster than conventional DRAM (system memory). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. This setting enables/disables the internal cache (also known as L1 or level 1 cache) and external cache (also known as L2 or level 2 cache). Setting options: *Disabled, Enabled*.

Quick Power On Self Test
The option speeds up Power On Self Test (POST) after you power on the

computer. When setting the item to *Enabled*, BIOS will shorten or skip some check items during POST. Setting options: *Enabled, Disabled*.

First/Second/Third Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. The settings are:

Floppy	The system will boot from floppy drive.
LS120	The system will boot from LS-120 drive.
HDD-0	The system will boot from the first HDD.
SCSI	The system will boot from the SCSI.
CDROM	The system will boot from the CD-ROM.
HDD-1	The system will boot from the second HDD.
HDD-2	The system will boot from the third HDD.
HDD-3	The system will boot from the fourth HDD.
ZIP100	The system will boot from ATAPI ZIP drive.
LAN	The system will boot from the Network drive.
Disabled	Disable this sequence.

Boot Other Device
Setting the option to *Enabled* allows the system to try to boot from other device if the system fails to boot from the First/Second/Third boot device.

Swap Floppy Drive
Setting to *Enabled* will swap floppy drives A: and B:.

Boot Up Floppy Seek
Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Settings: *Disabled* and *Enabled*.

Boot Up NumLock Status
This setting is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow users to use the arrow keys on the numeric keypad. Setting options: *On*, *Off*.

Gate A20 Option
This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value *Fast* is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When

Normal is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate Setting
This setting is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

Typematic Rate (Chars/Sec)
After *Typematic Rate Setting* is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: *6*, *8*, *10*, *12*, *15*, *20*, *24* and *30*.

Typematic Delay (Msec)
This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: *250*, *500*, *750* and *1000*.

Security Option
This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
Setup	The password prompt appears only when end users try to run Setup.
System	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

OS Select For DRAM > 64MB
This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: *Non-OS2, OS2*.

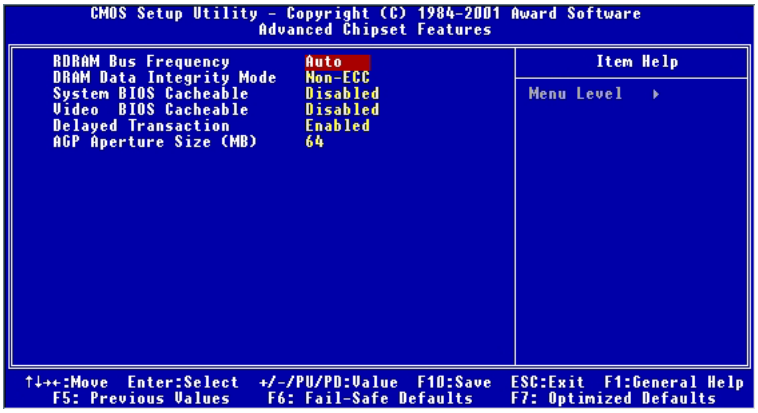
HDD S.M.A.R.T. Capability
This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline. Settings: *Enabled* and *Disabled*.

Report No FDD For WIN 95
For compatibility with Windows 95 logo certification, select *Yes* to release IRQ6 when the system contains no floppy drive. When this setting is set to *Yes*, users have to select *Disabled* for the *Onboard FDC Controller* in the Integrated Peripherals menu. Setting options: *Yes, No*.

Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the "ADVANCED CHIPSET FEATURES" from the Main Menu and the following screen will appear.



Note: Change these settings only if you are familiar with the chipset.

RDRAM Bus Frequency
This setting allows you to set the bus frequency for installed RDRAM. Setting options: *Auto, 400 MHz, 300 MHz*.

DRAM Data Integrity Mode
Select *ECC* (Error-Checking & Correcting Code) or *Non-ECC* according to the type of DRAM installed.

System BIOS Cacheable
Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Setting options: *Enabled, Disabled*.

Video BIOS Cacheable
Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this

memory area, a system error may result. Setting options: *Enabled*, *Disabled*.

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles so that transactions to and from the ISA bus are buffered and PCI bus can perform other transactions while the ISA transaction is underway. Select *Enabled* to support compliance with PCI specification version 2.1. Setting options: *Enabled, Disabled*.

AGP Aperture Size (MB)
This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The option allows the selection of an aperture size of *4MB, 8MB, 16MB, 32MB, 64MB, 128MB,* and *256MB*.

Integrated Peripherals

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Integrated Peripherals
On-Chip Primary PCI IDE Enabled
On-Chip Secondary PCI IDE Enabled
IDE Primary Master PIO Auto
IDE Primary Slave PIO Auto
IDE Secondary Master PIO Auto
IDE Secondary Slave PIO Auto
IDE Primary Master UDMA Auto
IDE Primary Slave UDMA Auto
IDE Secondary Master UDMA Auto
IDE Secondary Slave UDMA Auto
USB Controller Enabled
USB Keyboard Support Enabled
Init Display First AGP
AC97 Audio Auto
AC97 Modem Auto
OnBoard Sound Auto
IDE HDD Block Mode Enabled
POWER ON Function BUTTON ONLY
KB Power ON Password Enter
Hot Key Power ON Ctrl-F1
Onboard FDC Controller Enabled
Onboard Serial Port 1 3F8/IRQ4
Onboard Serial Port 2 2F8/IRQ3
UART Mode Select Normal
RxD , TxD Active Hi,Lo
IR Transmission Delay Enabled
UR2 Duplex Mode Half
Use IR Pins IR-Rx2Tx2
Onboard Parallel Port 378/IRQ7
Parallel Port Mode SPP
EPP Mode Select EPP1.7
ECP Mode Use DMA 3
PWRON After PWR-Fail Off
Game Port Address 201
Midi Port Address 330
Midi Port IRQ 10
Power Status Led Single
Item Help
Menu Level
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

On-Chip Primary/Secondary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose *Enabled* to activate each channel separately.

IDE Primary/Secondary Master/Slave PIO
The four items allow you to set a PIO (Programmed Input/Output) mode for each of the four IDE devices that the onboard IDE interface supports. *Modes 0~4* provide increased performance. In *Auto* mode, BIOS automatically determines the best mode for each IDE device.

IDE Primary/Secondary Master/Slave UDMA
Ultra DMA implementation is possible only if your IDE device supports it and your operating environment contains a DMA driver. If both your hard drive and software support Ultra DMA 33/66/100, select *Auto* to enable BIOS support.

USB Controller
Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. Setting options: *Enabled, Disabled*.

USB Keyboard Support
Set to *Enabled* if your need to use an USB keyboard in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

Init Display First
This item specifies which VGA card is your primary graphics adapter. Settings: *PCI Slot* and *AGP*.

AC'97 Audio
Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard AC'97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings: *Auto*, *Disabled*.

AC'97 Modem
Auto allows the mainboard to detect whether a modem is used. If a modem is used, the onboard MC'97 (Modem Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect to a modem. Settings: *Auto*, *Disabled*.

Onboard Sound
Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard audio controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings: *Auto*, *Disabled*.

IDE HDD Block Mode
This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive. Block mode is also called block transfer, multiple commands or multiple sector read/write. *Enabled* enables IDE controller to use block mode; *Disabled* allows the controller to use standard mode.

POWER ON Function
This controls which part on the PS/2 mouse or keyboard can power on the

system. Settings: *Password*, *Hot KEY*, *Mouse Left*, *Mouse Right*, *BUTTON ONLY* and *Keyboard 98*.

KB Power ON Password
If *POWER ON Function i*s set to *Password*, then you can set a password in the field for the PS/2 keyboard to power on the system.

Hot Key Power ON
If *POWER ON Function* is set to *Hot KEY*, you can assign a hot key combination in the field for the PS/2 keyboard to power on the system. Settings: *Ctrl-F1* through *Ctrl-F12*.

Onboard FDC Controller
The item is used to enable or disable the onboard Floppy controller. Select *Enabled* when you have installed a floppy disk drive and want to use it.

Onboard Serial Port 1/2
The items specify the base I/O port address and IRQ for the onboard Serial Port A/Serial Port B. Selecting *Auto* allows BIOS to automatically determine the correct base I/O port address. Settings: *Disabled*, *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3* and *Auto*.

UART Mode Select
The field allows you to specify the operation mode for serial port "COM B". Settings are:

Normal: RS-232C Serial Port
IrDA: IrDA-compliant Serial Infrared Port
ASKIR: Amplitude Shift Keyed Infrared Port

RxD, TxD Active
This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: *Hi/Hi, Hi/Lo, Lo/Hi, Lo/Lo*.

IR Transmission Delay
This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: *Disabled, Enabled*.

UR2 Duplex Mode
This setting controls the operating mode of IR transmission/reception. Setting

options: *Full, Half*. Under Full Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under Half Duplex mode, only asynchronous, bi-directional transmission/reception is allowed.

Use IR Pins
Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. Setting options: *RxD2/TxD2, IR-Rx2Tx2*.

Onboard Parallel Port
This specifies the I/O port address and IRQ of the onboard parallel port. Settings: *378/IRQ7*, *278/IRQ5*, *3BC/IRQ7* and *Disabled*.

Parallel Port Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port
ECP + EPP: Extended Capability Port + Enhanced Parallel Port

SPP/EPP/ECP/ECP+EPP

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP mode simultaneously, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP + EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

EPP Mode Select
The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec or EPP 1.9 spec can be chosen.

ECP Mode Use DMA
The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA." At this time, the user can choose between DMA channel 3 or 1.

PWRON After PWR-Fail
This setting specifies whether your system will reboot after a power failure or

interrupts occurs. Available settins are:

Off	Leaves the computer in the power off state.
On	Reboots the computer.
Former-Sts	Restores the system to the status before power failure or interrupt occurs.

Game Port Address/Midi Port Address
This setting disables or assigns an address for the onboard game/midi port.

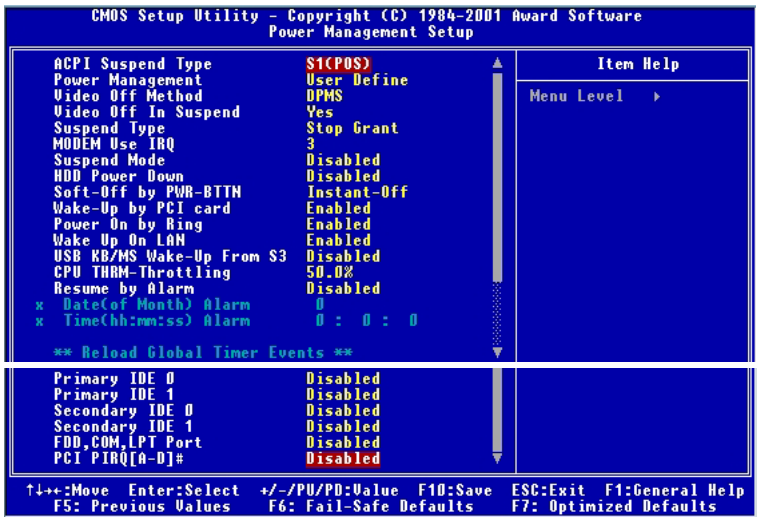
Midi Port IRQ
This setting specifies an IRQ for the onboard midi port.

Power Status LED
This item sets how the system uses Power LED on the case to indicate the suspend/sleep state. Settings are:

Single	The Power LED blinks to indicate the suspend/sleep state.
Dual	The Power LED changes its color to indicate the suspend/sleep state.

Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.


CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
Power Management Setup
ACPI Suspend Type S1(POS)
Power Management User Define
Video Off Method DPMS
Video Off In Suspend Yes
Suspend Type Stop Grant
MODEM Use IRQ 3
Suspend Mode Disabled
HDD Power Down Disabled
Soft-Off by PWR-BTTN Instant-Off
Wake-Up by PCI card Enabled
Power On by Ring Enabled
Wake Up On LAN Enabled
USB KB/MS Wake-Up From S3 Disabled
CPU THRM-Throttling 50.0%
Resume by Alarm Disabled
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
** Reload Global Timer Events **
Primary IDE 0 Disabled
Primary IDE 1 Disabled
Secondary IDE 0 Disabled
Secondary IDE 1 Disabled
FDD,COM,LPT Port Disabled
PCI PIRQ[A-D]# Disabled
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Suspend Type
This item specifies the power saving modes for ACPI function. Options are:

S1/POS The S1 sleep mode is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context.

S3/STR The S3 sleep mode is a power-down state in which power is supplied only to essential components such as main memory and wake-capable devices and all system context is saved to main memory. The information stored in memory will be used to restore the PC to the previous state when an “wake up” event occurs.

Power Management
This item is used to select the degree (or type) of power saving and is related

to these modes: Suspend Mode and HDD Power Down. There are three options for power management:

Min Saving	Minimum Power Management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
Max Saving	Maximum Power Management. Suspend Mode = 1 Min, and HDD Power Down = 1 Min.
User Define	Allows end users to configure each mode separately.

Video Off Method
This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

Video Off In Suspend
This setting determines whether the monitor will be turned off during suspend mode. Setting options: *Yes, No*.

Suspend Type
This setting allows you to select the type of Suspend mode. Setting options: *Stop Grant* (saves the state of the entire system to disk and then powers off the system), *PwrOn Suspend* (the CPU and core system remain powered on in a very low-power mode).

Modem Use IRQ
Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Settings are *3*, *4*, *5*, *7*, *9*, *10*, *11* and *NA*.

Suspend Mode
After the selected period of system inactivity, all devices except the CPU shut off. Settings are *Disabled*, *1 Min*, *2 Min*, *4 Min*, *8 Min*, *12 Min*, *20 Min*, *30 Min*, *40 Min* and *1 Hour*.

HDD Power Down
If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings are *Disabled* and *1 through 15 Min*.

Soft-Off by PWR-BTTN
This feature allows users to configure the power button function. Settings are:

Instant-Off	The power button functions as a normal power-on/-off button.
Delay 4 Sec.	When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

Wake Up by PCI Card, Power On by Ring, Wake Up On LAN, USB KB/MS Wake-Up From S3
These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

Note: To use the function of "Power On by Ring" and "Wake Up On LAN", you need to install a modem/LAN card supporting power on function.

CPUTHRM-Throttling
The item allows you to specify the CPU speed (at percentage) to which it will slow down when the CPU reaches the predetermined overheat temperature. Settings range from 12.5% to 87.5% at 12.5% increment.

Resume by Alarm
The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

Date (of Month) Alarm
The field specifies the date for Resume by Alarm. Settings: 0~31.

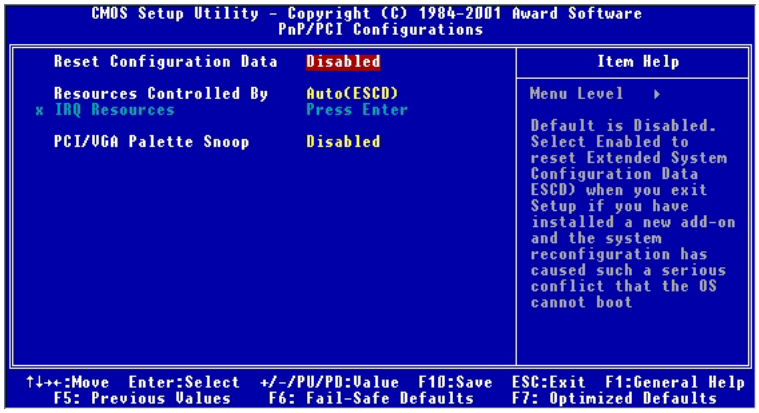
Time (hh:mm:ss) Alarm
The field specifies the time for *Resume by Alarm. F*ormat is <hour> <minute><second>.

Reload Global Timer Events: Primary IDE 0/1, Secondary IDE 0/1, FDD/ COM/LPT Port, PCI PIRQ [A-D]#

Global Timer Events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device that is configured as *Enabled*, even when the system is in a power down mode.

PNP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.


CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
PnP/PCI Configurations
Reset Configuration Data
Disabled
Resources Controlled By
Auto(ESCD)
x IRQ Resources
Press Enter
PCI/VGA Palette Snoop
Disabled
Item Help
Menu Level ▸
Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Reset Configuration Data
Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The settings are: *Enabled* and *Disabled*.

Resource Controlled By
The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows 95/98. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢"). The settings are: *Auto (ESCD), Manual.*

IRQ Resources
The items are adjustable only when *Resources Controlled By* is set to *Manual*.

Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

PCI Device	For Plug & Play compatible devices designed for PCI bus architecture.
Reserved	The IRQ will be reserved for further request.

PCI/VGA Palette Snoop

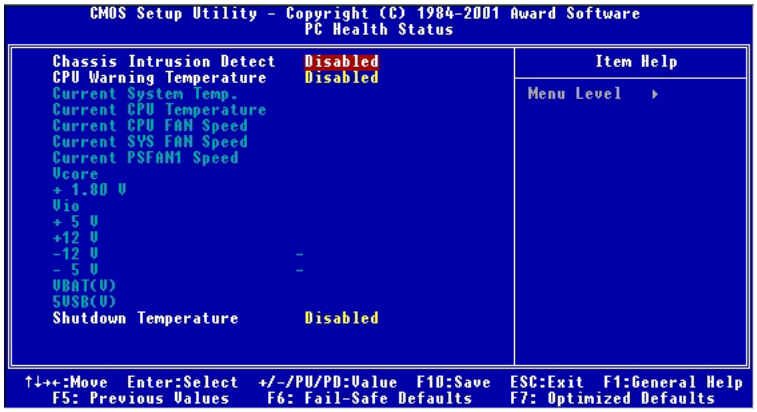
When set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	**Action**
Disabled	Data read or written by the CPU is only directed to the PCI VGA device's palette registers.
Enabled	Data read or written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both VGA devices to be identical.

The setting must be set to *Enabled* if any ISA bus adapter in the system requires VGA palette snooping.

PC Health Status

This section shows the status of your CPU, fan, warning for overall system status.



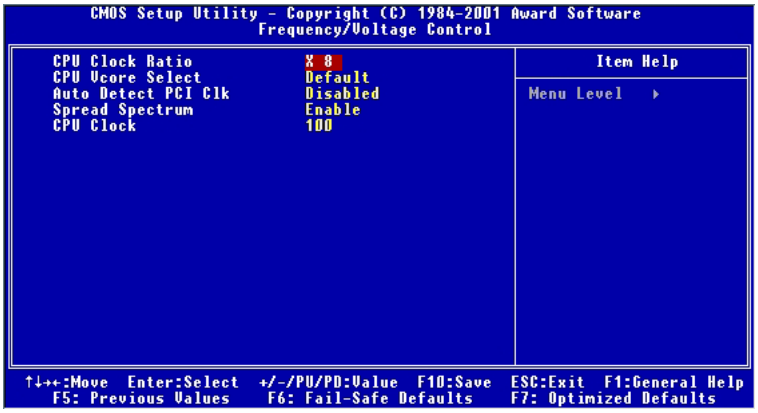
Chassis Intrusion Detect
Set this option to enable, reset, or disable the chassis intrusion detector. During *Enabled*, any intrusion on the system chassis will be recorded. The next time you turn on the system, it will show a warning message. To be able to clear those warnings, choose *Reset*. After clearing the message it will go back to *Enabled*.

CPU Warning Temperature
If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheat problem.

Current System/CPU Temperature, Current CPU/SYS/PS FAN Speed, Vcore, +1.80V, Vio, +5V, +12V, -12V, -5V, VBAT(V), 5VSB(V)
These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

Shutdown Temperature
The setting allows ACPI-aware OS to automatically shutdown if the system temperature reaches a thermal level preset in the field. This can prevent the system components from being damaged due to overheat.

Frequency/Voltage Control



CPU Clock Ratio
This setting controls the multiplier that is used to determine the internal clock speed of the processor relative to the external or motherboard clock speed.

CPU Vcore Select
This setting allows you to set the CPU core voltage. Setting options: *Default, +25mV, +50mV, +75mV, +100mV*.

Auto Detect PCI Clk
To reduce the occurrence of electromagnetic interference (EMI), the BIOS detects the presence or absence of components in PCI slots and turns off system clock generator pulses to empty slots. The settings are: *Enabled, Disabled*.

Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, setting to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed of

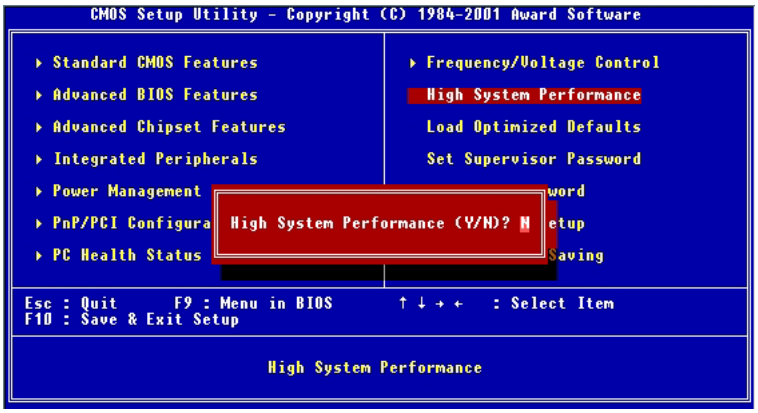
25MHz (with a 1GHz CPU) which may just cause your overclocked processor to lock up.

CPU Clock
This setting specifies the clock frequency of CPU host bus (FSB) and provides a method for end-users to overclock the processor accordingly.

High System Performance

This option on the main menu allows users to restore all the BIOS settings to the default High Performance values. The High Performance Defaults are the default values set by the mainboard manufacturer specifically for maximal system performance but will probably cause a stability issue.

When you select High System Performance, a message as below appears:



Pressing 'Y' loads the default BIOS values that enable the best system performance (better than the Optimized Defaults) but may result in the instability of the system.

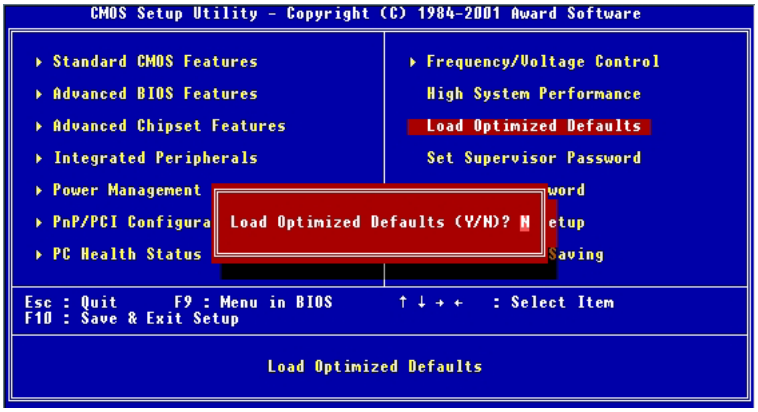
WARNING!

This setting is for experienced or overclocking users only. If the system crashes or hangs after enabling the feature, please CLEAR CMOS DATA to resolve the problem. For more information, refer to Clear CMOS Jumper in Chapter 2.

Load Optimized Defaults

This option on the main menu allows users to restore all the BIOS settings to the default Optimized values. The Optimized Defaults are the default values also set by the mainboard manufacturer for both optimized and stable performance of the mainboard.

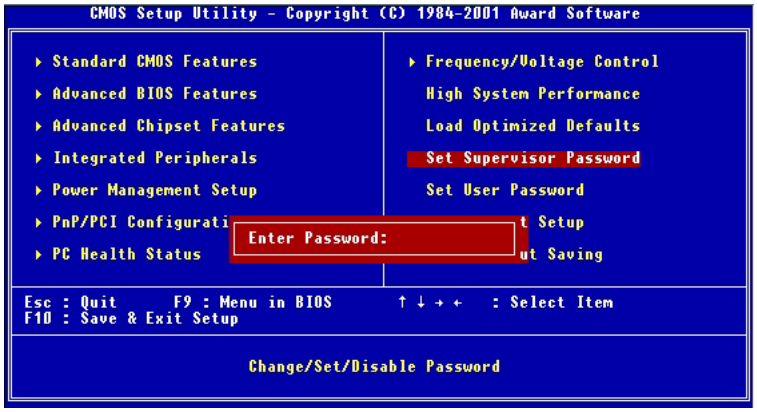
When you select Load Optimized Defaults, a message as below appears:



Pressing 'Y' loads the default values that are factory settings for optimal and stable system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:



Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously set password from CMOS memory. You will be prompted to confirm the password. Re-type the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the Security Option of the Advanced BIOS Features menu. If the Security Option is set to *System*, the password is required both at boot and at

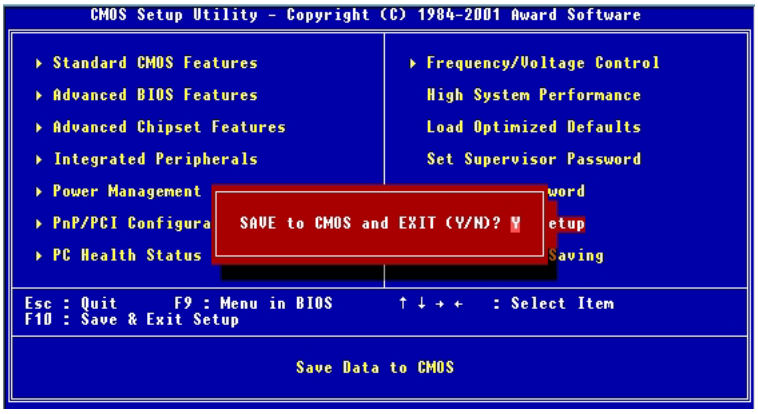
entry to Setup. If set to *Setup*, password prompt only occurs when trying to enter Setup.

About Supervisor Password & User Password:

Supervisor password :	*Can enter and change the settings of the setup menus.*
User password:	*Can only enter but do not have the right to change the settings of the setup menus*

Save & Exit Setup

When you want to quit the Setup menu, you can select this option to save the changes and quit. A message as below will appear on the screen:

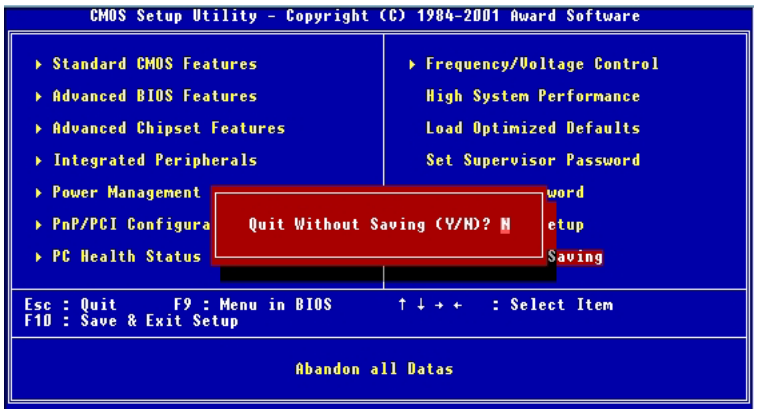


Typing “Y” will allow you to quit the Setup Utility and save the user setup changes to RTC CMOS.

Typing “N” will return to the Setup Utility.

Exit Without Saving

When you want to quit the Setup menu, you can select this option to abandon the changes. A message as below will appear on the screen:



Typing "Y" will allow you to quit the Setup Utility without saving any changes to RTC CMOS.

Typing "N" will return to the Setup Utility.

MSI Smart Key A

If security is important to you, the MSI Smart Key is the best solution to prevent your data in the computer from being accessed by unauthorized people.

In the public workspace, the passwords (BIOS password, system password, etc.) are not enough to keep your privacy. Do you believe that a hacker can easily enter your computer and monitor your confidential data? It happens everyday, everywhere; you just do not know... A password only stops them at the first gate. If this protection is broken, what else can you rely on?

The MSI Smart Key is a hardware device that provides you the complete and perfect protection on your system. Once the key is installed and setup, any unauthorized user absolutely can not access and use your computer without the key. The computer needs the key to boot up, and the operating system needs the key to work normally. Furthermore, if you have to leave your desktop for a while, you can simply unplug the key to keep your system in a safest status.

The section includes the following topics:

Installing MSI Smart Key A-2
Using MSI Smart Key A-3

Installing MSI Smart Key

Installation

Simply follow the few steps below, you can install the Smart Key into your computer very easily.

1. Turn off the computer.
2. Locate the USB port on your computer.
3. Connect the cable to the USB port, and then plug the Smart Key into the connector properly.
4. Turn on the computer, and now you can implement this powerful feature.

Note: *After you have installed the Smart Key into your computer, the BIOS will detect it when the system boots up, and you have to enabled/ disabled this function. Furthermore, you should install the dedicated software application in the operating system, which is provided by MSI, to obtain the overall protection on your system. The following sections will provide the detailed instructions for the BIOS setup and software installation.*

System Requirements

Before you use the MSI Smart Key, please check the hardware, software and operating system requirements first.

Operating System	Windows 98/ME/2000/XP
Connector	USB port
Disk Space	At least 2 MB to install the software application

Using MSI Smart Key

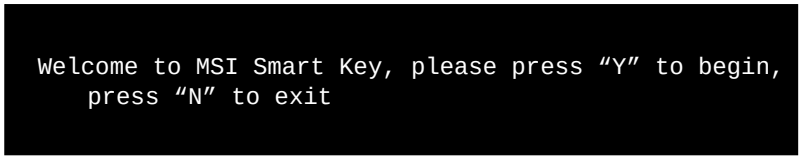
BIOS Setup

When the Smart Key is inserted into your computer, the BIOS will detect it automatically. You can enable or disable the Smart Key through the BIOS setting. **Please note that it needs a personalized password to execute any kind of Smart Key setting**; so, keep the password firmly in mind. If, unfortunately, the Smart Key is lost or the password is missed, you can not enter the operating system successfully. At this time, contact your local dealer for further service.

Enable/Disable the Smart Key

The first time installation

1. Insert the Smart Key into the computer and turn on the power.
2. Press <F7> during system boot up.
3. The message as below appears on the screen asking you to enable or disable the key:

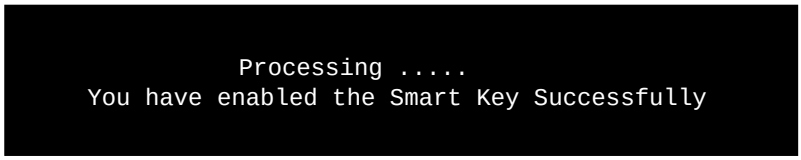


Type <Y> to enable it; type <N> to disable it and bypass the BIOS to enter the operating system. When you type <Y>, it shows the following message:

4. Type the password, up to 8 characters, and press <Enter>, it will show the following message to ask you confirm the password:

Type the password again and press <Enter>.

5. After the password is confirmed, the system will generate a set of random ID, and record this ID into the BIOS ROM and the memory chip on the key; it will show the following message when the Smart Key is enabled successfully:



Then, you can enter the operating system and start to work.

Note:

1. You should firmly remember the password you set; if the Smart Key is lost, you can get a new key from MSI, and turn on the computer with the original password.

2. To avoid the password from being forgotten, we provide the table below for you to keep note in this guide. Please write down the password and keep the guide properly.

3. After the Smart Key function is successfully configured under DOS, the system will automatically reset and enter the installed OS. Please DO NOT unplug the Smart Key until the system has entered the OS.

Enable/disable Smart Key function

1. Turn on the computer with the Smart Key installed.
2. Press <F7> during system boot up.
3. The message as below appears on the screen asking you to enable or disable the key:

```
If you want to disable MSI Smart Key,
please press “Y”, or press “N” to exit
```

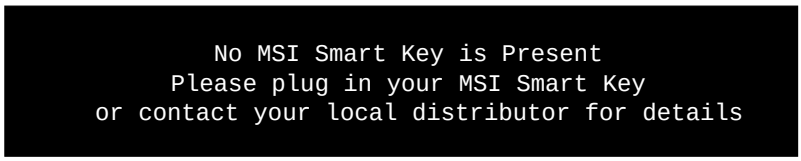
Type <Y> to disable it; type <N> to keep the function enabled and enter the operating system. When you type <Y>, it shows the following message:

```
Processing .....
You have disabled the Smart Key Successfully
```

Then, you can enter the operating system and start to work.

Boot up with no key /wrong key/new key installed

Once the MSI Smart Key is enabled, always keep the key inserted in the computer. If the key is unplugged, the other user can not access the computer. The message as below appears during the system booting up:



The user have to find and re-plug the original key into the computer to continue booting up the system. If the wrong key or a new key* is inserted, it will show the message as below on the screen:

If the user remember the original password, typing in the password will allow the user to enter the operating system, and the system BIOS will copy the original password data into the wrong key/new key. Otherwise, the system will halt after entering the wrong password for three times.

** If, unfortunately, your Smart Key was lost , you have to purchase a new key from MSI as a replacement.*

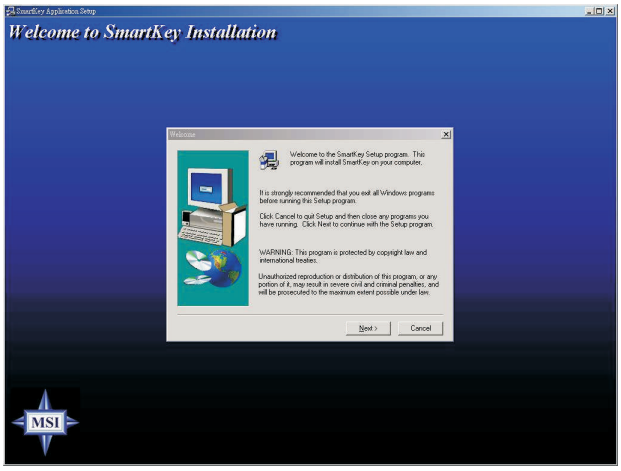
Software Setup

When the Smart Key is inserted into your computer and the software application is installed in the operating system, it will serve as a safeguard for your system. When the key is unplugged, the operating system will enter protection status immediately and the mouse and keyboard will be locked; when the key is inserted again, the operating system will resume from the protected mode.

Installation

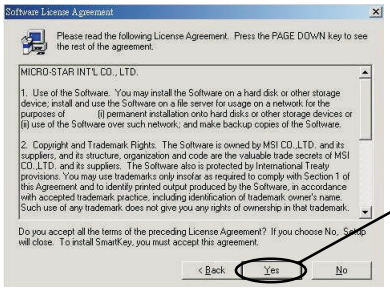
1. Install the Smart Key into the computer and turn on the power to enter the operating system successfully.

2. Insert the CD-ROM provided and the setup program will execute automatically. The welcome screen will appear as below:

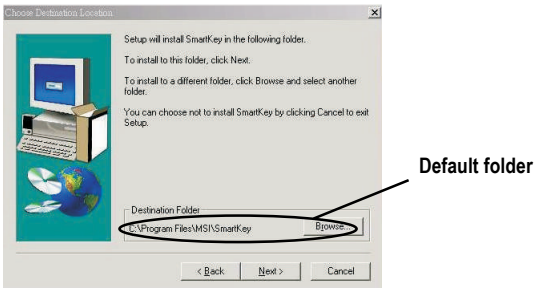

Welcome to SmartKey Installation
Welcome to the SmartKey Setup program. This program will install SmartKey on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel
MSI

3. Press [Next >] to start the installation.

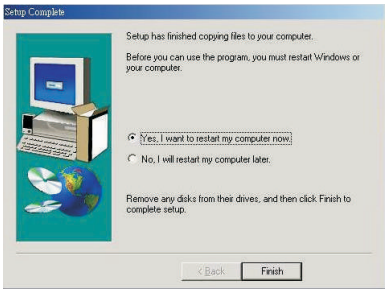
4. When the Software License Agreement window appears on the screen, press [Yes] to continue.


Software License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.
MICRO-STAR INT'L CO., LTD.
1. Use of the Software. You may install the Software on a hard disk or other storage device; install and use the Software on a file server for usage on a network for the purposes of (i) permanent installation onto hard disks or other storage devices or (ii) use of the Software over such network; and make backup copies of the Software.
2. Copyright and Trademark Rights. The Software is owned by MSI CO.,LTD. and its suppliers, and its structure, organization and code are the valuable trade secrets of MSI CO.,LTD. and its suppliers. The Software also is protected by International Treaty provisions. You may use trademarks only insofar as required to comply with Section 1 of this Agreement and to identify printed output produced by the Software, in accordance with accepted trademark practice, including identification of trademark owner's name. Such use of any trademark does not give you any rights of ownership in that trademark.
Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install SmartKey, you must accept this agreement.
< Back
Yes
No
Click here

5. Choose the folder to install the software in your computer; simply press [Next >] to install it in the default folder.


Choose Destination Location
Setup will install SmartKey in the following folder.
To install to this folder, click Next.
To install to a different folder, click Browse and select another folder.
You can choose not to install SmartKey by clicking Cancel to exit Setup.
Destination Folder
C:\Program Files\MSI\SmartKey
Browse...
< Back
Next >
Cancel
Default folder

6. When the installation is completed, restart the computer as instructed.

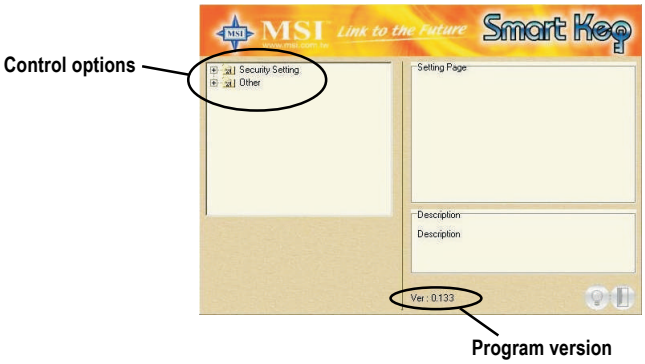

Setup Complete
Setup has finished copying files to your computer.
Before you can use the program, you must restart Windows or your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish

Using the Software Application

1. When the program is installed in the operating system, it will embed in the system tray and show an icon as below:

Note: When the Smart Key function is disabled in BIOS, this program will not be launched in the operating system.

2. To launch the program's setup screen, simply left-click on the Smart Key icon in the system tray. The program's setup screen appears as below.



This window contains the information of the program and the main options for the user to control: ***Security Setting*** and ***Other***.

Security Setting

This option allows you to logon to Windows automatically. Select the "Auto Login" item and check the "Auto Logon to Windows" item in the Setting Page field to enable the function. Once the function is enabled and set properly, you do not have to type the user's name and password everytime when entering Windows.

In Windows 2000, it will show the related fields when the "Auto Logon to Windows" is checked, you should fill in the correct information in these fields.

Other

This option contains two items:

1) **Disable Screen Saver** allows you to enable/disable the screen saver program when the system is locked.

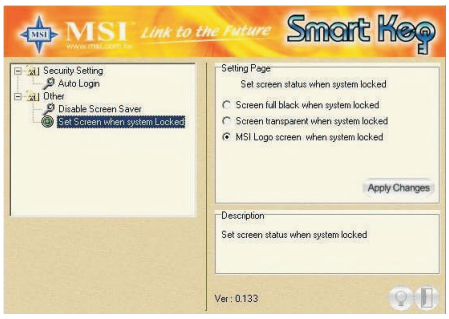
2) **Set Screen When System Locked** allows you to set the status when the Smart Key is unplugged and the system locked. You can set the monitor to display:

a) blank screen

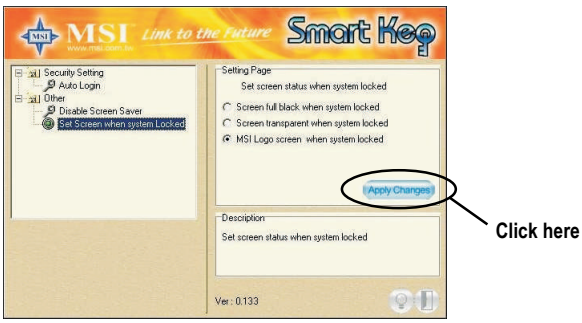
b) the retaining screen when the system locked

c) MSI Logo

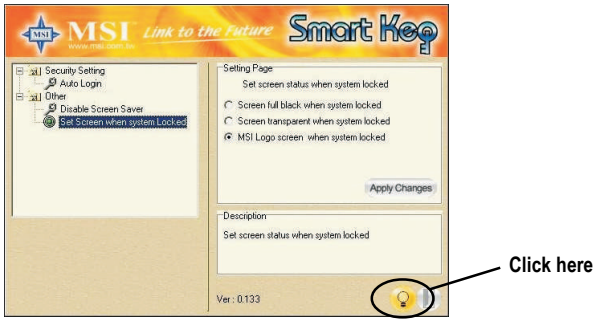
The default setting is to show MSI Logo.



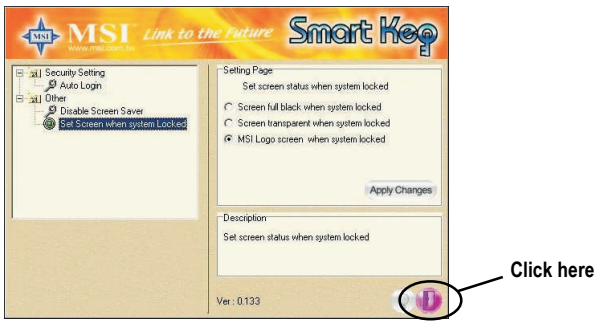
3. Press the "Apply Changes" button to enable the option you choose.



4. Press the "bulb" button at the right-bottom to hide the program in the system tray and keep on monitoring the system.



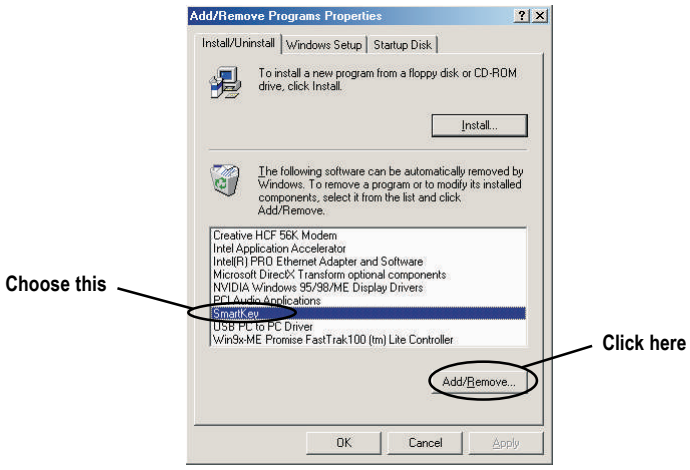
5. Press the "door" button at the right-bottom to exit the program.



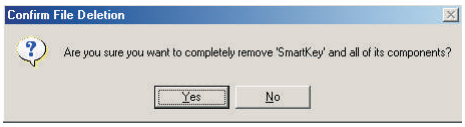
Removing the Software Application

To remove the program, follow the steps below:

1. Click Start and choose **Settings** → **Control Panel**; double-click the **Add/Remove Programs** item to open the "Add/Remove Programs Properties" window.


Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To install a new program from a floppy disk or CD-ROM drive, click Install.
Install...
The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.
Creative HCF 56K Modem
Intel Application Accelerator
Intel(R) PRO Ethernet Adapter and Software
Microsoft DirectX Transform optional components
NVIDIA Windows 95/98/ME Display Drivers
PCI Audio Applications
SmartKey
USB PC to PC Driver
Win9x-ME Promise FastTrak100 (tm) Lite Controller
Add/Remove...
OK
Cancel
Apply
Choose this
Click here

2. Select the "SmartKey" item in the field and click the [Add/Remove...]; when it shows the dialog box requiring your confirmation, press [Yes] to start removing the program as the on-screen instructions.



3. Restart the computer when the un-installation is completed.

Using 4-/6-channel Audio Function B

The mainboard comes with C-Media 6-channel audio function, which allows you to attach 4 or 6 speakers for better space sound effect. The section will tell you how to activate 4-/6-channel audio function.

This section includes the following topics:

Installing C-Media Drivers	B-2
Hardware Configuration	B-2
Software Configuration	B-3

Installing C-Media Drivers

The mainboard is able to transform the audio connectors on the back panel from 2-channel to 4-/6-channel. To use the function, you need to install the C-Media drivers.

To install C-Media drivers:

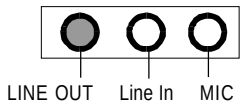
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click on **C-Media Sound Drivers**.
3. Follow the on-screen instructions to complete installation.
4. Restart the system.

> ***Note:*** *For Windows NT4.0, you need to install the C-Media Sound Drivers* ***manually****.*

Hardware Configuration

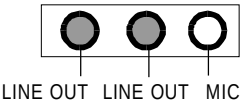
After installing the C-Media drivers, you can attach the speakers for 4-/6-channel audio output. Always connect the speakers to the LINE OUT connectors. Different connector configurations for 2-/4-/6-channel operations are listed below:

2-Channel



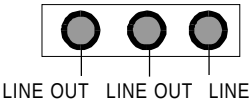
In 2-channel configuration, Line Out, Line In and MIC functions all exist.

4-Channel



When set to 4-channel configuration, LINE IN function DOES NOT WORK any more.

6-Channel



When set to 6-channel configuration, LINE IN and MIC functions DO NOT WORK anymore.

Software Configuration

To have 4-/6-channel audio work, you must set appropriate configuration in the C-Media software application.

To set the multi-channel configuration:

1. Click the C-Media Mixer icon from the window tray on the bottom.
2. The following screen appears. Click the indicated button.

3. The "Advanced" window appears.

4. Select 5.1 for 6-channel or 4 for 4-channel audio output.
5. Click OK.

C

USB PC to PC Networking Function (Optional)

USB PC to PC is the best solution for providing the easiest network connection service to you. By connecting multiple PCs through USB PC to PC port, you can build up a local area network without any network adapter. We give this Ethernet emulation environment a name — USB PC to PC. USB PC to PC supports TCP/IP, NetBEUI and IPX protocols. These features make your PCs able to share their resources such as files or printers to each other. Furthermore, USB PC to PC also gives you the ability of connecting to your existing Home or Office LAN for network resource or Internet sharing.

The section includes the following topics:

Installing GeneLink™ LAN Driver C-2
Using USB PC to PC Networking Function C-4

Appendix C

Installing GeneLink™ LAN Driver

Before you use the function, you need to install the GeneLink™ LAN Driver to all PCs connected via USB PC to PC cables.

Step 1. Installing driver

1. Insert the driver CD and click "USB PC to PC" button to install the driver.
2. The welcome dialog box appears and click Next > button.
3. Choose the destination folder and click Next > button.
4. Select components that you want to install and then click Next > button. (GeneLink™ LAN Driver is used only for those PCs connected via USB PC to PC port so that resources are shared between these PCs; GeneLink™ Software Router allows your PC to connect to another existing Home/Office LAN for network resource or Internet sharing.)
5. The Setup Program will install all necessary components automatically.
6. Setup completes. Then select 'Yes, I want to restart my computer now' and click "FInish" button to reboot your computer for updating your driver configuration.

After you complete the installation procedures, you'll find Setup Program has installed GeneLink™ network driver in your computer. It binds TCP/IP, NetBEUI and IPX protocols to GeneLink™ device.

Step 2 – Connect your PCs via the USB PC to PC cable

Step 3 - Network Login

When you restart your computer, you will be prompted for a user name and password to login your network. Please enter an unique name for your PC.

Step 4 – Sharing your resources and Connecting to Internet

You need to manually share your resources (files, folders, drives and printers) to make them accessible for other computers. For Internet accessing, you must define which computer (That has already been connected to Internet) should install GeneLink™ Software Router. And all clients accessing Internet resources through GeneLink™ USB port should have installed GeneLink™ LAN driver.

Notice:

1. *You should use the same network protocol (TCP/IP, NetBEUI or IPX) for connecting GeneLink™ LAN to existing Home/Office LAN.*
2. *If you've already configured your [IPX/SPX] and [Client for Netware Networks] before installing GeneLink™ driver, we strongly recommend that you should also install* ***Software Router*** *while installing GeneLink™ driver into your system.*

Appendix C

Using USB PC to PC Networking Function

How to share your files, folders, drives and printers

a. Go to the file, folder, drive or printer that you want to share.
b. Right click your mouse pointer on the resource you want to share, you'll see a POP-UP Menu.

c. Select " Sharing" and you'll see another POP-UP Menu.

d. In “Sharing” tag, select “Share As”.
e. Enter a name to help others recognize your sharing file or device (optional).
f. Select “Access Type”. If you select “ Depend on Password”, your need to assign an access password for this device.
g. Click “OK” button.

How to check if you have already shared your resources

Go to the resource and check if Windows had added a hand on its icon or not. If yes, it means you’ve successfully shared your resource and others can access it through USB PC to PC; if not, you need to repeat the steps described in “**How to share your files, folders, drives and printers”** to complete your sharing processes.

Connecting to your existing Home or Office LAN

To connect your USB PC to PC to another existing Home of Office LAN via USB PC to PC port, you need to install **GeneLink™ Software Router** in addition to GeneLink™ LAN driver. GeneLink™ Software Router is responsible for handling all network packets between USB PC to PC and your Home/Office LAN. So only the computer that is physically connected to both LANs needs to install GeneLink™ Software Router (i.e., this computer should install both GeneLink™ LAN and one network adapter for Home/Office LAN). For those computers on USB PC to PC, you only need to follow installation procedures on the manual to install GeneLink™ LAN driver. The following procedures will show you how to install drivers to the computer that will link both PC and your existing Home/Office LAN:

Notice: If you want to connect your GeneLink™ LAN to your existing Home/Office LAN, you should use the same protocol for the two LANs. For example, if your Home/Office LAN uses TCP/IP protocol, you should also use TCP/IP protocol for your GeneLink™ LAN. Otherwise, these two LANs cannot communicate to each other. The Setup Program installs TCP/IP, NetBEUI and IPX protocols for GeneLink™ LAN by default. If your Home/Office LAN uses other protocol, please install the same protocol for those computers within GeneLink™ LAN.

Appendix C

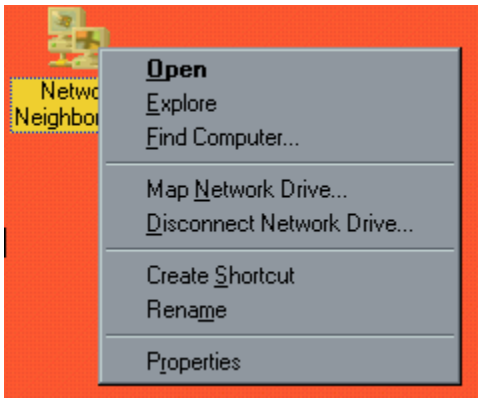
Connecting to Internet through USB PC to PC & Office/Home LAN

If you would like to access Internet resources through USB PC to PC, here are some things you should notice:

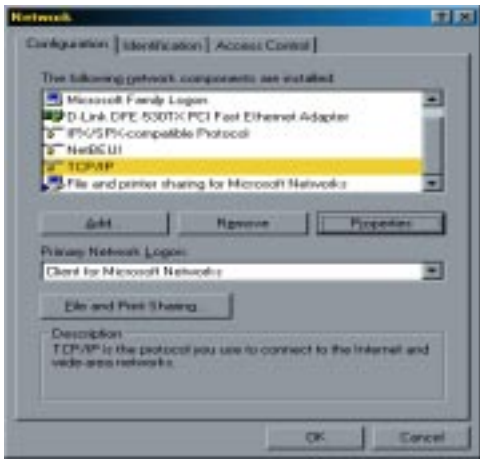
a. You must define which computer should install GeneLink™ Software Router.
b. The computer which has installed GeneLink™ Software Router should have already been connected to internet.
c. All clients which would like to access Internet resources through USB cable should have installed GeneLink™ driver.

Now we need to make some network configurations on the Desktop/ Notebook which connect to GeneLink™ Software Router to make your Internet access possible (maybe you need to consult you Network Administrator for doing that):

a. If your existing home/office network is NOT using DHCP to assign client's IP address, your need to:
- Move your mouse pointer on Network Neighborhood icon and right click on it. You'll see a pop-up menu.



- Click on “Properties”, you’ll see another menu.



- Choose TCP/IP in Configuration tag, and then press “Properties” button. You’ll see “TCP/IP Properties” menu.

- Now you need to navigate between “IP Address”, “Gateway”, and “DNS Configuration” tags to specify “IP Address”, “Subnet Mask”, “Gateway” and “DNS Server”. If you don’t know their values, pleases consult your Network Administrator.

- Press “OK” button to go back to “Network” pop-up menu. Choose “Identification” tag. Specify an unique name for your computer if it doesn’t have and fill in the name of your workgroup. If you are not sure what’s the name of your computer or Workgroup, please consult your Network Administrator.

- Press “OK” to complete your network configuration. Restart your computer and you’ll be ready to connect to Internet.

b. If your existing HOME/OFFICE network is using DHCP to assign client’s IP address, your Network Sever will configure your network configuration automatically. So you can skip those procedures described in the previous session.

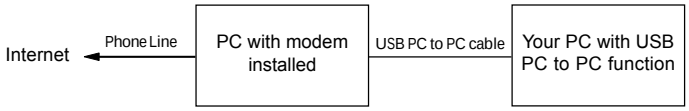
SPECIAL NOTICE for those users who have already installed Network Adapter in their system:

If you've already configured your [IPX/SPX] and [Client for Netware Networks] before installing GeneLink™ driver, we strongly recommend that you should also install ***Software Router*** when you install GeneLink™ driver into your system. If you decide not to install ***Software Router***, then the OS will not allow two IPX/SPX configurations co-exist in the same system. This will cause GeneLink™ Driver Install Program overwrite your original IPX/SPX configuration and make your original network configuration malfunction.

Appendix C

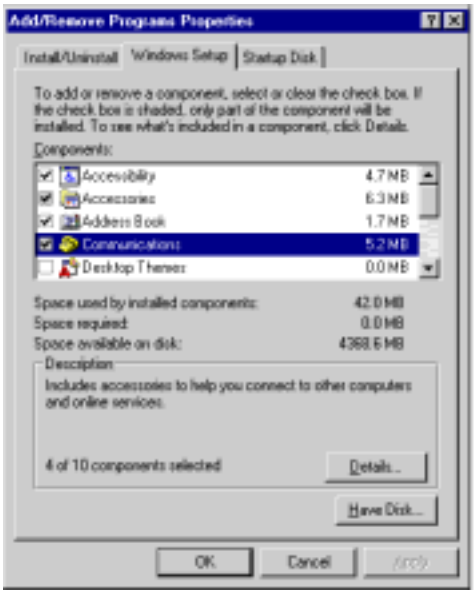
Connecting to internet through USB PC to PC & remote modem

If there is no existing Office/Home LAN and your computer does not have a modem, you still can connect USB PC to PC to internet through another computer with a modem installed. **The function is available in Windows® 98SE and ME.**



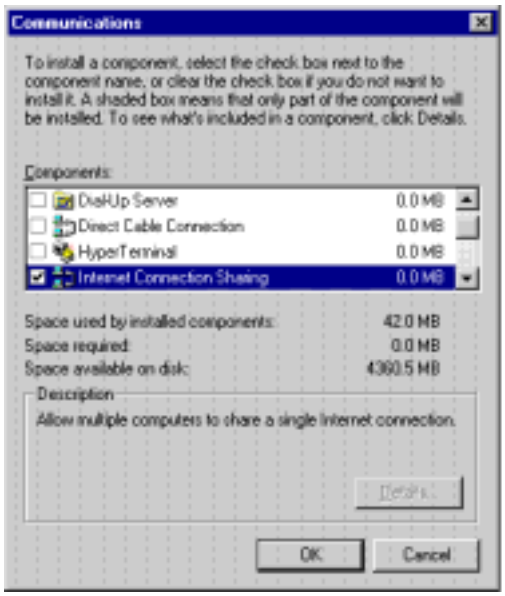
To access internet through another computer with modem, you need to setup "Internet Connection Sharing" on all computers connected via USB PC to PC cables. Instructions are as follows:

a. Go to "Control Panel".
b. Double click "Add/Remove Programs" and the "Add/Remove Programs Properties" window appears.
c. Select "Windows Setup" tag and double click


Add/Remove Programs Properties
Install/Uninstall
Windows Setup
Startup Disk
To add or remove a component, select or clear the check box. If the check box is shaded, only part of the component will be installed. To see what's included in a component, click Details.
Components:
Accessibility 4.7 MB
Accessories 6.3 MB
Address Book 1.7 MB
Communications 5.2 MB
Desktop Themes 0.0 MB
Space used by installed components: 42.0 MB
Space required: 0.0 MB
Space available on disk: 4368.6 MB
Description
Includes accessories to help you connect to other computers and online services.
4 of 10 components selected
Details...
Have Disk...
OK
Cancel

"Communications". The "Communications" window appears.

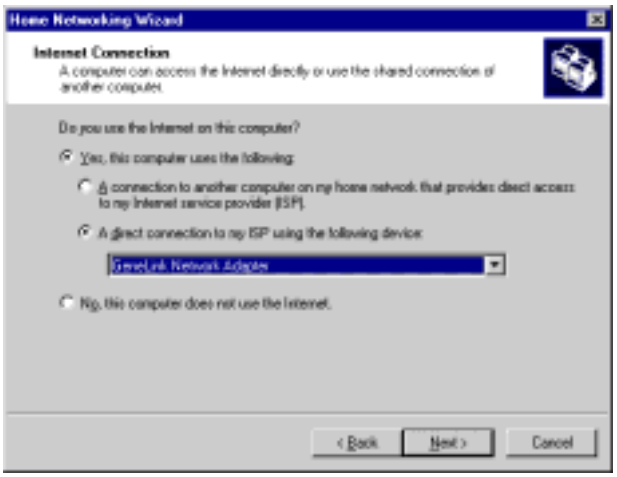
d. Check "Internet Connection Sharing" and click "OK".


Communications
To install a component, select the check box next to the component name, or clear the check box if you do not want to install it. A shaded box means that only part of the component will be installed. To see what's included in a component, click Details.
Components:
Dial-Up Server 0.0 MB
Direct Cable Connection 0.0 MB
HyperTerminal 0.0 MB
Internet Connection Sharing 0.0 MB
Space used by installed components: 42.0 MB
Space required: 0.0 MB
Space available on disk: 4393.5 MB
Description
Allow multiple computers to share a single Internet connection.
Details...
OK
Cancel

e. The "Home Networking Wizard" starts. Click "Next".

Home Networking Wizard
Welcome to the Home Networking Wizard
This wizard guides you through setting up Home Networking, which you can use to share resources such as files, printers, and an Internet connection among the computers in your home.
Your network hardware, such as the devices and cables that enable your computers to communicate, should be installed and set up correctly before you run this wizard. For help setting up your network hardware, see Using Home Networking in Windows Me Help.
To continue, click Next.
< Back
Next >
Cancel

f. Click “Adirect connection to my ISP using the following device”, and select “GeneLink Network Adapter” from the pull-down menu. Click “Next”.


Home Networking Wizard
Internet Connection
A computer can access the Internet directly or use the shared connection of another computer.
Do you use the Internet on this computer?
Yes, this computer uses the following:
A connection to another computer on my home network that provides direct access to my Internet service provider (ISP).
A direct connection to my ISP using the following device:
No, this computer does not use the Internet.
< Back
Next >
Cancel

Note: For the computer with a modem installed, you need to select “**My Connection**” instead of “GeneLink Network Adapter” on the step, and after finishing installation of “My Connection”, select “GeneLink Network Adapter” when the above window returns.

g. Continue to click “Next”.

h. Click "Finish."

Home Networking Wizard
Completing the Home Networking wizard
The Home Networking wizard is ready to make any changes you specified.
If you created or used a Home Networking wizard Setup disk, remove the disk from the floppy drive.
If you need help using your home network, see Windows Me Help and Support. Click Start, click Help, click Home Networking, and then click Using Home Networking.
To close this wizard, click Finish. If you are prompted to restart your computer, click Yes.
< Back
Finish
Cancel

i. Restart the computer.

Note: In Windows® 98SE, you can access internet through the shared connection of another computer, but it is unable for you to control the remote modem. However, in *Windows® ME*, you are allowed to dial the remote modem of another computer using the dialing program built in Windows®.

Glossary

ACPI (***A**dvanced **C**onfiguration & **P**ower **I**nterface*)
This power management specification enables the OS (operating system) to control the amount of power given to each device attached to the computer. Windows 98/98SE, Windows 2000 and Windows ME can fully support ACPI to allow users managing the system power flexibly.

AGP (***A**ccelerated **G**raphics **P**ort*)
A new, high-speed graphics interface that based on PCI construction and designed especially for the throughput demands of 3-D graphics. AGP provides a direct channel (32-bit wide bus) between the display controller and main memory for high graphics quality and performance.

ATX
A modern shape and layout of mainboard that supersedes the widely-used Baby AT form factor. It improves many placement of components and makes a more efficient design.

BIOS (***b**asic **i**nput/**o**utput **s**ystem*)
On PCs, an essential software that contains all the control code of input/output interface (such as keyboard, disk drives, etc.). It executes hardware test on booting the system, starts the OS, and provides an interface between the OS and the components . The BIOS is stored in a ROM chip.

Buffer
A region of memory reserved as a temporary storage area. In most cases, the OS or applications will create buffer areas to save the necessary data, and the applications can find the data in the areas first to increase the processing speed.

Bus
A set of hardware lines within the computer system, through which the data is transferred among different components. In a PC, the term ***bus*** usually refers to a local bus that connects the internal components to the CPU and main memory.

Cache
A special memory subsystem that is used to speed up the data traffer. It stores the contents of frequently accessed RAM locations and the addresses where these data items are stored.

Chipset
A collection of integrated chips designed to perform one or more related functions. For

example, a modem chipset contains all the primary circuits for transmitting and receiving data; a PC chipset provides the electronic interfaces between all subsystems.

CMOS (***c****omplementary* ***m****etal-****o****xide* ***s****emiconductor*)
CMOS is a widely used type of semiconductor, which features high speed and low power consumption. PCs usually contain a small amount of battery-powered CMOS memory to retain the date, time, and system setup parameters.

COM
In MS-DOS system, the name of a serial communications port. DOS supports four serial ports. For example, if a modem is connected to one serial port and a serial mouse to another, they are identified as COM1 and COM2.

DIMM (***d****ual* ***i****n-line* ***m****emory* ***m****odule*)
A small circuit board that holds memory chips. A ***SIMM*** *(****s****ingle* ***i****n-line* ***m****emory* ***m****odule)* has a 32-bit path to the memory chips whereas a DIMM has 64-bit path.

DMA (***d****irect* ***m****emory* ***a****ccess*)
A transfer mode between the main memory and the peripheral devices that without passing through the CPU. Using the DMA controller, data is transferred much faster.

DRAM (***D****ynamic* ***RAM***)
A most common type of computer memory. It usually uses one transistor and a capacitor to represent a bit. As the development of technology, the memory type and specification used in computer becomes variety, such as SDRAM, DDR SDRAM, and RDRAM. For further instruction, please see the table below:

Dynamic RAM (DRAM) Memory Technologies

Type	First Used	Clock Rate	Bus* Width	Peak Bandwidth	Volts
FPM (60,70ns)	1990	25MHz	64 bits	200 MBps	5v
EDO (50,60,70ns)	1994	40MHz	64 bits	320 MBps	5v
SDRAM (66MHz)	1996	66MHz	64 bits	528 MBps	3.3v
SDRAM (100MHz)	1998	100MHz	64 bits	800 MBps	3.3v
SDRAM (133MHz)	1999	133MHz	64 bits	1.1 GBps	3.3v
RDRAM (Direct Rambus)	1999	400MHz	16 bits	1.6 GBps	2.5v
DDR SDRAM (100MHz)	2000	100MHz	64 bits	1.6 GBps	3.3v
DDR SDRAM (133MHz)	2000	133MHz	64 bits	2.1 GBps	3.3v

* Memory channel width (64 bits started with 75MHz Pentium)

Source: Computer Desktop Encyclopedia

ECC Memory (***e**rror **c**orrecting **c**ode memory*)
A type of memory that contains special circuitry for testing the accuracy of data and correcting the errors on the fly.

IDE (***I**ntegrated **D**rive **E**lectronics*)
A type of disk-drive interface widely used to connect hard disks, CD-ROMs and tape drives to a PC, in which the controller electronics is integrated into the drive itself, eliminating the need for a separate adapter card. The IDE interface is known as the ATA (AT Attachment) specification.

IEEE 1394
A new, high speed external bus standard, also known as ***FireWire*** or ***iLink***, which supports data transfer rates of up to 400 Mbps for connecting up to 63 external devices.

IrDA (***I**nfra**r**ed **D**ata **A**ssociation*)
A group of device vendors, including computer, component and telecommunications, who have developed a standard for transmitting data via infrared light waves. This enables you to transfer data from one device to another without any cables.

LAN (***l**ocal **a**rea **n**etwork*)
A computer netwoek that covers a relatively smaller area, such as in a building or an enterprise. It is made up of servers, workstations, shared resources, a network operating system and a communications link. These individual PCs and devices on a LAN are known as "nodes", and are connected by cables to access data and devices anywhere on the LAN, so that many users can share expensive devices and data.

LED (***l**ight **e**mitting **d**iode*)
A semiconductor device that converts electrical energy into light. Since it lights up (usually red) when electricity is passed through it, it is usually used for the activity lights on computer's component, such as disk drivers.

LPT (***l**ine **p**rinter **t**erminal*)
Logical device name for a line printer; a name reserved by the MS-DOS for up to three parallel printer ports: LPT1, LPT2, and LPT3. It is frequently used by the OS to identify a printer.

PCI (***P**eripheral **C**omponent **I**nterconnect*)
A local bus standard developed by Intel that first appeared on PCs in late 1993. PCI provides "plug and play" capability and allows IRQs to be shared. The PCI controller can exchange data with the system's CPU either 32 bits or 64 bits at a time.

PnP (***P****lug a****n****d* ***P****lay*)
A set of specifications that allows a PC to configure itself automatically to work with peripherals. The user can "plug" in a peripheral device and "play" it without configuring the system manually. To implement this useful feature, both the BIOS that supports PnP and a PnP expansion card are required.

POST (***P****ower* ***O****n* ***S****elf* ***T****est*)
During booting up your system, the BIOS executes a series of diagnostic tests, include checking the RAM, the keyboard, the disk drives, etc., to see if they are properly connected and operating.

PS/2 Port
A type of port developed by IBM for connecting a mouse or keyboard to a PC. The PS/2 port supports a mini DIN plug containing just 6 pins. Most modern PCs equipped with PS/2 ports so that the special port can be used by another device, such as a modem.

USB (***u****niversal* ***s****erial* ***b****us*)
A hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, etc. USB provides a maximum bandwidth of 12 Mbit/sec (Mbps) for connecting up to 127 peripheral devices to PC. USB features hot swap capability and multiple data streams, allows external devices to be plugged in and unplugged without turning the system off.

Virus
A program or a piece of code that infects computer files by inserting in those files copies of itself. The virus code is buried within an existing program, and is activated when that program is executed. All the viruses are man-made, and often have damaging side effects.